my student, Miss Catherine Mose, gives the following results: *S. parvula* var. *mollis* has two kinds of hairs, the first 2–3 (rarely –4)-celled, gland-tipped, smooth, 100–200 mu long, the second 1–2-celled, eglandular, curving, smooth or papillate. Var. *ambigua* has hairs 1–2-celled, 50–75 mu. long, minutely papillate. Var. *australis* has gland-tipped 5–7-celled hairs 500 mu or more long, 60 mu in diameter at base and tapering, and a second type which are unicellular, eglandular, perfectly cylindrical, 800 to 1000 mu or more long and 10 mu in diameter. In addition there are a few of the second type of var. *mollis*, 100 mu or less long, papillate or smooth.

The writer wishes to express appreciation to the curators of the Missouri Botanical Garden and of the herbarium of the University of Arkansas for loans of material, and to Mrs. F. R. Jones for studying the material of *Scutellaria* at the Field Museum.

Madison, Wisconsin.

LOCAL PLANTS OF THE INNER COASTAL PLAIN OF SOUTHEASTERN VIRGINIA

M. L. Fernald

(*Continued from page 366*)

Part II. Enumeration and Discussion of Noteworthy Species Collected

In the following notes the procedure of the last two papers on Virginia is followed, of recording such species and stations as seem to be significant in working out a fuller knowledge of the flora of the state. Although primarily a record of collections made in 1936, note is made of earlier or later collections in a few cases.[2] The names of species newly recorded (or seemingly so) from the state are preceded by an asterisk. In some cases revisions of groups suggested by the work on our plants have been included; and in many cases illustration has

[1] To save space the collectors are indicated (except in formal descriptions and revisions) by initials: *F. &. G.* (*Fernald & Griscom*); *F. G. & L.* (*Fernald, Griscom & Long*); *F. & L.* (*Fernald & Long*); *F. L. & F.* (*Fernald, Long & Fogg*); *F. L. & S.* (*Fernald, Long & Smart*).

[2] In two weeks of field work in the same area in September, 1937, Mr. Long and I collected at new stations more than 100 species here noted (*Ctenium aromaticum, Panicum hemitomon, Xyris Curtissii, Cleistes divaricata, Spiranthes ovalis*, etc.). These new stations and records for 70 species new to Virginia, collected in early April and in mid-September, 1937, must await publication until a later paper.

seemed important to clarify the discussions. The photographs have been made chiefly by E. C. Ogden, the cost covered in part by a grant from the Milton Fund for Research, in part from an appropriation from the Division of Biology of Harvard University, in part by the Gray Herbarium. The large expense of reproducing the photographs has been generously met, as several times before, by my most helpful and self-effacing companion, whose keenness in following up and detecting rare species is unequaled, Bayard Long.

Dryopteris celsa (Wm. Palmer) Small. Nansemond County: inundated cypress swamp along Somerton Creek, near Factory Hill, *F. & L.*, no. 6750. See p. 363.

Equisetum hyemale L., var. affine (Engelm.) A. A. Eaton. Surry County: open sandy thicket by James River, Clermont Wharf, *F. & L.*, no. 6754.

Hardly to have been expected on the Coastal Plain; presumably derived from farther up the James.

Lycopodium complanatum L., var. flabelliforme Fern. Sussex County: dry sandy pine woods about 4 miles northwest of Homeville, *F. & L.*, no. 5971. See p. 337.

L. tristachyum Pursh. With the latter, no. 5970. See p. 337.

This and the latter are northern species, seeming quite out of place among the austral species with which they grew.

*Potamogeton capillaceus Poir., var. **atripes**, var. nov., rhizomate stolonibusque subrigidis atratis; foliis submersis anguste linearibus firmis adscendentibus nec subcapillaribus et flaccidis, 2–3 cm. longis, ad nervum medium ubique lacunosis lacunis utrinque 2–3-seriatis.—Virginia: in clay of spring-head in wooded sphagnous bog, Coddyshore,[1] Sussex County, July 20, 1936, *Fernald & Long*, no. 5976.

In its black and almost ligneous rhizome and in its firm and dark, instead of very elongate and flaccid submersed leaves ("like floss-silk"—*Morong*), var. *atripes* is a striking departure from *Potamogeton capillaceus*. The greater development of lacunae in these submersed leaves and the absence of the usual subglobose spikes from their axils are noteworthy characters; but occasionally some submersed leaves of the delicate-leaved *P. capillaceus* have extra rows of lacunae and the absence of the short submersed spikes is not really distinctive, for otherwise typical *P. capillaceus* may sometimes bear only the elongate upper spikes. As a striking variety, however, var. *atripes* is worthy

[1] The locality "Coddyshore" is taken from the government topographic map, although the name seems to be unfamiliar to the present colored inhabitants (see p. 336). The little bog is in a depression west of the Jerusalem Plank Road, barely south of the northern boundary of Sussex County.

separation. It grows in very plastic Tertiary clay (highly acid), whereas typical *P. capillaceus*, which we have never seen from Virginia, is a plant of sandy, gravelly or peaty bottoms. See p. 336.

SAGITTARIA WEATHERBIANA Fern. SOUTHAMPTON COUNTY: in pools, sandy alluvial bottomlands of Three Creek, Drewryville, *F. L. & S.*, no. 5591. SUSSEX COUNTY: shallow pools in woods, Warwick Swamp, northwest of Waverly, *F. & L.*, no. 5978. See p. 331 and MAP 5.

Extension inland from Norfolk County.

ECHINODORUS RADICANS (Nutt.) Engelm. Bottomlands of the Nottoway and its tributary, Three Creek, in SOUTHAMPTON COUNTY: Courtland and Cypress Bridge, *F. & L.*, nos. 6452 and 5980. See pp. 332 and 341 and MAP 16.

The roots (rarely well represented in herbaria) bear abundant fusiform or sausage-shaped structures suggesting the "tubers" on some species of *Eleocharis*.

BROMUS PURGANS L. SUSSEX COUNTY: border of dry sandy woods, 4 miles south of Stony Creek, *F. G. & L* , no. 6519.

Usually a plant of rich interior habitats; here on the inner edge of the Coastal Plain.

*FESTUCA PARADOXA Desv. (*F. Shortii* Kunth). SOUTHAMPTON COUNTY: sandy alluvial bottomlands of Three Creek, Drewryville, and dry woods, thickets and clearings along Three Creek, *F. L. & S.*, nos. 5634 and 5635; open argillaceous thickets south of Courtland, *F. L. & S.*, no. 3636. SUSSEX COUNTY: dry sandy, hickory and oak woods, Burt, *F. & L.*, no. 6035. DINWIDDIE COUNTY: border of dry sandy woods near Carson, *F. L. & S.*, no. 5637. See p. 331 and MAP 6.

A typical plant of the prairies and bottoms of the interior of the country, most surprising to find in abundance and in various habitats on the Atlantic Coastal Plain.

*GLYCERIA CANADENSIS (Michx.) Trin. PRINCE GEORGE COUNTY: bushy swamp southeast of Petersburg, at head of Poo Run, *F. & L.*, no. 6034. See p. 334.

A characteristic species of Newfoundland, eastern Canada and the northernmost states, here growing with *Carex bullata* (also new to Virginia), within a short distance of the northernmost known stations for *Ctenium aromaticum*, *Andropogon Mohrii*, *Rynchospora dodecandra*, *Aletris aurea*, *Rhexia ciliosa* and numerous other distinctively austral species.

MUHLENBERGIA CAPILLARIS (Lam.) Trin. GREENSVILLE COUNTY: sandy clearing north of Emporia, *F. L. & S.*, no. 6775. See p. 364.

Agrostis elata (Pursh) Trin. Prince George County: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6776. See p. 363 and map 20.

Aristida virgata Trin. Sussex County: dry pine and oak woods about 3 miles southwest of Waverly, *F. & L.*, no. 6774. Isle of Wight County: dry sandy pine barrens, south of Zuni, *F. G. & L.*, nos. 6509 and 6511. See p. 354 and map 26.

Recorded by Hitchcock, *North American Species of Aristida*, Contr. U. S. Nat. Herb. xxii. 579 (1924) only from the Dismal Swamp.

A. dichotoma Michx., var. Curtissii Gray. Greensville County: dry sandy clearings and borders of woods along Fontaine Creek, southwest of Haley's Bridge, *F. G. & L.*, no. 6510.

Recorded by Hitchcock, l. c. 536, only from Bedford County, the type region. Our station is well out on the Coastal Plain.

Ctenium aromaticum (Walt.) Wood. Prince George County: argillaceous and siliceous boggy depression southeast of Petersburg, at head of Poo Run, *F. & L.*, no. 6031. See p. 335 and map 11.

Leersia lenticularis Michx. Southampton County: sandy alluvial woods, bottomland of Blackwater River, southeast of Ivor, *F. & L.*, no. 6026. Greensville County: sandy alluvium, bottomlands of Fontaine Creek, southwest of Haley's Bridge, *F. G. & L.*, no. 6506. See pp. 348 and 353 and map 22.

*L. hexandra Swartz. Sussex County: sandy and peaty depression (exsiccated shallow pond), about 4 miles northwest of Homeville, *F. & L.*, no. 6027. See p. 338.

*Leptoloma cognatum (Schultes) Chase. Prince George County: dry sandy clearings about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6763. Southampton County: dry open ground, Courtland, *F. & L.*, no. 6764. See p. 363.

*Paspalum dissectum L. Southampton County: open sandy alluvial bank of Nottoway River, below Cypress Bridge, *F. & L.*, no. 5981. See p. 341.

A single specimen, doubtless washed down from a more suitable habitat (not yet discovered) up-river.

Paspalum fluitans (Ell.) Kunth, Rév. Gram. i. 24 (1829). *Ceresia fluitans* Ell. Sk. Bot. S. C. and Ga. i. 109, pl. 6, fig. 4 (1816). *P. mucronatum* Muhl. Descr. Gram. 96 (1817). *P. natans* Le Conte in Journ. de Phys. lxxxxi. 285 (1820). *P. Frankii* Steud. Syn. Pl. Glum. i. 19 (1854). *P. repens*, as to plant of United States, *sensu* Chase in Contrib. U. S. Nat. Herb. xxviii. 31 (1929) and *sensu* Hitchc. Man. Grasses U. S. 579 (1935). Southampton County: open sandy alluvial bank of Nottoway River, below Cypress Bridge, *F. & L.*, no. 5982; open sandy borders of pools and depressions in bottomland of Nottoway River, Courtland, *F. & L.*, no. 6460. Plate 474, figs. 6–13. See pp. 341 and 359 and map 17.

Although the northeastern limit is stated by Mrs. Chase and, after her, by Hitchcock as in South Carolina, it is to be noted that *Paspalum fluitans* was treated by Gray, Man. ed. 2: 576 (1856), as growing in "River-swamps, Virginia, S. Ohio, Illinois and southward." The Virginia record of Gray was based presumably on a plant of Rugel in the Gray Herbarium, without statement of locality but with a label, written by Rugel and exactly similar to his more complete ones from Western Branch (in Norfolk County, near Portsmouth). Incidentally the late Edward Tatnall, in his Catalogue of the Plants of Newcastle County, Delaware, 91 (1860) listed *P. fluitans* from "an exsiccated pond; J. W. Andrews. Rare," with the special comment: "A native of the Southern States, but evidently indigenous in the locality named, which has been a number of years submersed."[1]

The plant of the southeastern Coastal Plain and the Mississippi Basin passed, correctly, as *Paspalum fluitans* through the four succeeding editions of Gray's Manual, there properly described as "Annual," but in the 7th edition (1908), the late Professor Hitchcock, responsible for the treatment of the *Gramineae*, took up the later name *P. mucronatum* Muhl. (1817) and incorrectly cited its synonym as "*P. fluitans* Ell.", rather than *P. fluitans* (Ell.) Kunth; Elliott (1816) having called the plant *Ceresia fluitans*.

Throughout this period *Paspalum fluitans*, the annual (possibly sometimes perennial) lanceolate-leaved plant of the eastern United States, was correctly maintained as an endemic species. In 1929, however, in her *North American Species of Paspalum* (Contrib. U. S. Nat. Herb. xxviii. Pt. 1), Mrs. Chase merged it, without explanation, with the tropical American *P. repens* Bergius, describing it, without qualification, as "perennial"; "sheaths . . . in all a prominent erect auricle on either side at summit"; "blades . . . 10 to 20 cm. long and 12 to 15 mm. wide, sometimes as much as 27 cm. long and 2.5 cm. wide"; "spikelets . . . 1.4 to 2 mm. long . . . pubescent with soft spreading hairs to glabrous." In this description one can hardly recognize the "Annual" of the United States, correctly described by Hitchcock in Gray's Manual, ed. 7, with "*blades* lanceolate, 2.5–15 cm. long, 6–14 *mm. wide* [sometimes as narrow as 3 mm.]" and "*spikelets* . . . about 1.5 *mm. long, sparsely pubescent with minutely glandular hairs.*"

[1] Mr. Long writes me that, at the Philadelphia Academy there are sheets of characteristic *Paspalum dissectum* from Newcastle County. These may have been misidentified as *P. fluitans* by Tatnall. Dr. Robert Tatnall so believes. The dot on MAP 17 for Delaware is, consequently, open to doubt.

As treated by Mrs. Chase, and subsequently by Hitchcock, the aggregate *Paspalum repens* has an extraordinarily disrupted range: Florida to eastern Texas, north to South Carolina, southern Indiana,[1] Illinois, Missouri and Kansas; Jamaica; southeasternmost Mexico and Central America (Tabasco and Guatemala southward); and tropical South America. With broad gaps in the range, from Jamaica to Florida and from Tabasco (tropical) to eastern Texas, as indicated by Mrs. Chase's citation of specimens, it has seemed to me important to check the question, to determine whether *P. fluitans* has been correctly treated by most botanists for more than a century as an endemic species of the United States or whether it is wisely merged with a geographically remote tropical species.

Mrs. Chase gives detailed statements regarding the types of the species she merges under *Paspalum repens*. *P. repens* itself was from Surinam (Dutch Guiana) and Mrs. Chase's identification of it with the characteristic South American plant is unquestioned: "Bergius' detailed description, especially the statement that the mouth of the sheath is bidentate, referring to the prominent auricles characteristic of this species, and the plate, leave no doubt as to its identity. The spikelets are not said to be pubescent so that it is to be assumed those of Bergius' specimen are glabrous."

The other South American plants referred by Mrs. Chase to *Paspalum repens* are three. *P. gracile* Rudge (1805), from Guiana, is shown in the plate with the characteristic slender auricles at the summit of the sheath, but it differs from most South American specimens, according to Mrs. Chase, in that "The spikelets are minutely pubescent." *P. pyramidale* Nees (1829), from Brazil (beautifully described "Vaginae . . . apice utrinque in dentem lanceolatum acuminatum . . . excurrentes. . . . Folia . . . firma, pedem ad pedem cum quadrante longa 6–8 lineas lata. . . . Spiculae . . . glabrae, . . . ¾ lineae longae, . . . Antherae fulvae") was clearly the coarse South American plant. *P. bistipulatum* Hochst. (1854), from Surinam, was named obviously for the "ligula in appendices 2 stipulaceas elongata"; and Mrs. Chase, examining the type, reports that it "has glabrous spikelets."

[1] Although Ohio (like Virginia) has been omitted from recent statements of range, the "S. Ohio" of Gray, Man. ed. 2, is supported by an old specimen in the Gray Herbarium marked simply "Ohio. Herb. Torr." It is not improbable that this was received from Thos. G. Lea and actually came from the Kentucky side of the Ohio River, at Covington—See E. Lucy Braun, *The Lea Herbarium and the Flora of Cincinnati*, Am. Midl. Nat. xv. 16 (1934).

The South American plant, true *Paspalum repens* (FIGS 1–5), is, then, comparatively coarse, with long leaves, the summit of the sheath bearing (as shown or described by all authors of supposed new species) elongate lanceolate "stipule"-like auricles (FIGS. 1–3), and the spikelets (FIGS. 4 and 5) are usually glabrous.

Mrs. Chase justly emphasizes the long lanceolate or falcate auricles which surmount the sheaths of *Paspalum repens*. If the temperate North American annual is identical with the tropical American perennial, it seems very strange that its stipular auricles should be nearly or quite suppressed. In much of the material from the United States (*P. fluitans*) I fail to find them, but occasionally (FIGS. 6–10) they are represented by weak deltoid projections 1–3 mm. long. Walter (1788), who mistook *P. fluitans* for *P. paniculatum* L., did not mention them; neither did Elliott, whose *Ceresia fluitans* was accurately described: "*Root* annual? . . . *Leaves* 2–3 inches long, 4–5 lines wide, . . . *Calyx*, glumes . . . sprinkled with hair, . . . *Anthers* white." Muhlenberg (1817), correctly describing the "Cal[yx] 2-valvis . . . puberulis" of his *P. mucronatum*, did not note prolonged auricles; neither did LeConte (1820), in describing his *P. natans*, nor Steudel in characterizing his *P. Frankii* (1854), although he looked sharply enough at his New Orleans plant to describe the "spiculis . . . puberulis." In short, I find the original diagnoses of the various botanists who have proposed new names for the plant of the United States consistent and quite in agreement with my own observations that "the prominent auricles characteristic of this species [*P. repens* of South America]" are not at all characteristic of *P. fluitans* of the eastern United States.

The most important distinctions between our *Paspalum fluitans* and the tropical American *P. repens* are indicated in the succeeding paragraphs. In view of the possible misinterpretations I am showing the details of the two species in PLATE 474.

P. REPENS Bergius. Coarse perennial; leaf-blades linear-lanceolate, firm and opaque (translucent when long submersed), the principal ones 1.5–4 dm. long, 0.8–2.5 cm. broad; summit of sheath (until readily broken off) bearing a pair of lanceolate or lance-falcate attenuate auricles 5–13 mm. long; the flange at base of the blade broad, with a broadly rounded sinus; spikelets 1.8–2.2 mm. long, glabrous or rarely pubescent; anthers oblong, fulvous (rarely pale), about 1 mm. long. Tropical America. FIGS. 1–5.

P. FLUITANS (Ell.) Kunth. Weak annual, perhaps sometimes perennial; leaf-blades lanceolate, thin and translucent, the principal ones 0.25–3 dm.

long, 3–25 mm. broad; summit of sheath exauriculate or with thin deltoid auricles up to 3 mm. long; the flange at base of blade narrow, with a narrow sinus; spikelets 1.2–1.7 mm. long, viscid-pilose; anthers subquadrate, whitish, 0.3–0.4 mm. long. Eastern United States. Figs. 6–13. Map 17.

Panicum strigosum Muhl. Dinwiddie County: boggy woods near head of Old Town Creek, southwest of Petersburg, *F. & L.*, no. 5996. Prince George County: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5596. See pp. 326 and 338.

Reported by Hitchcock & Chase only from Norfolk County.

P. consanguineum Kunth. Prince George County: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5597; border of dry woods east of Prince George, *F. L. & S.*, no. 5598. Sussex County: depressions in argillaceous field north of Littleton, *F. & L.*, no. 5998. Southampton County: damp clearing in sandy oak and pine woods northeast of Cypress Bridge, *F. & L.*, no. 5999. See p. 326 and map 47.

Extensions inland from Princess Anne County.

P. nitidum Lam. Nansemond County: dry sandy pine woods south of Factory Hill, *F. & L.*, no. 6769.

Extension inland from Princess Anne County.

P. mattamuskeetense Ashe. Henrico County: exsiccated peaty clearing, Westover Hills, *F. & L.*, no. 6001. Prince George County: swampy woods west of New Bohemia, *F. L. & S.*, no. 5601. Nansemond County: damp sandy and peaty woods and margins of bordering ditch, southwest of Whaleyville, *F. & L.*, no. 6768. See p. 364 and map 31.

P. mattamuskeetense Ashe, var. **Clutei** (Nash), comb. nov. *P. Clutei* Nash in Bull. Torr. Bot. Cl. xxvi. 569 (1899). Isle of Wight County: moist or sphagnous depressions in sandy pine barrens, south of Zuni, *F. G. & L.*, no. 6482. See p. 356.

Panicum lucidum Ashe, var. **opacum**, var. nov., foliis opacis strigoso-pilosis; spiculis 1.5–1.8 mm. longis.—Prince George County, Virginia: argillaceous and siliceous boggy depression north of Gary Church, June 25, 1936, *Fernald, Long & Smart*, no. 5606, August 25, 1936, *Fernald & Long*, no. 6484 (type in Gray Herb.; isotypes in Herb. Phil. Acad., Herb. Univ. Richmond and elsewhere).

Panicum lucidum, one of the almost ubiquitous and most characteristic species of boggy spots on the coastal plain of Virginia, has lustrous and glabrous leaves and spikelets ranging from 1.8 to 2.1 mm. long. The plant here described, with smaller spikelets, has exactly the habit of *P. lucidum* but its leaves are opaque and definitely strigose-pilose, the hairs on the young foliage bullate at base. It forms a dense

growth in an extensive boggy depression, where it is associated with several localized species: the new *Juncus* described on a later page, an unusually pubescent form of *Panicum longifolium* Torr., *Scleria minor* (Britt.) W. Stone, *Xyris ambigua* Beyrich, *Sarracenia flava* L., etc. In other similar boggy depressions of the area all *Panicum lucidum* seemed to be the typical glabrous plant. See p. 358.

*P. WRIGHTIANUM Scribn. SUSSEX COUNTY: sandy and peaty depression (exsiccated shallow pond), about 4 miles northwest of Homeville, *F. & L.*, no. 6005. ISLE OF WIGHT COUNTY: wet peaty margin of pine woods about 3 miles southeast of Zuni, *F. & L.*, no. 6006; wet woodroads and borders of low woods, Boaz, *F. & L.*, no. 6007. See pp. 337 and 347 and MAP 13.

The extreme height given by Hitchcock (*Man.*) is 4 dm. Our material from Boaz is 7.5 dm. high.

P. COMMONSIANUM Ashe. ISLE OF WIGHT COUNTY: dry sandy pine barrens, south of Zuni, *F. G. & L.*, no. 6492. See p. 354.

Extension inland from Cape Henry.

P. ENSIFOLIUM AND ALLIES IN SOUTHEASTERN VIRGINIA.

Three separable entities occur in southeastern Virginia, all of which I have been referring without differentiation to *Panicum ensifolium* Baldwin, the one first described. They can be sorted into three piles, agreeing with *P. albomarginatum* Nash, *P. trifolium* Nash and *P. ensifolium* (true). I am not wholly convinced of their specific value, but, until they can be given more thorough study, they may be treated as species. All the collections of my parties have been distributed under the blanket name *P. ensifolium*.

P. ALBOMARGINATUM Nash. PRINCESS ANNE COUNTY: damp sandy and peaty depressions back of the dunes, Rifle Range, south of Rudy Inlet, *F. & L.*, nos. 3682 and 3683, *F. G. & L.*, no. 4539 (reported, RHODORA, XXXVII. 391, as *P. ensifolium*). PRINCE GEORGE COUNTY: dry sandy woods and clearings about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5618; border of swampy woods west of New Bohemia, *F. L. & S.*, no. 5619. HENRICO COUNTY: exsiccated argillaceous swale, Libbie Avenue, Westhampton, *F. L. & S.*, no. 5620.

Recorded by Hitchcock & Chase only from the Dismal Swamp.

*P. TRIFOLIUM Nash. SUSSEX COUNTY: dry pinelands about 4 miles northwest of Waverly, *F. & L.*, nos. 6010 and 6011. PRINCE GEORGE COUNTY: dry sandy woods and clearings about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5617; exsiccated argillaceous depression southeast of Petersburg, on headwaters of Blackwater River, *F. & L.*, no. 6009.

*P. ensifolium Baldwin. Sussex County: depressions in pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6012. Prince George County: sphagnous tussocks in argillaceous and siliceous boggy depression north of Gary Church, *F. L. & S.*, no. 5621. See p. 326.

P. scabriusculum Ell. Prince George County: swampy woods about 3 miles southeast of Petersburg, on headwaters of Blackwater River, *F. L. & S.*, no. 5628. Southampton County: sandy wooded swamp southwest of Cypress Bridge, *F. & L.*, no. 6016.

P. commutatum Schultes, var. **Joorii** (Vasey), comb. nov. *P. Joorii* Vasey, U. S. Dept. Agric. Div. Bot. Bull. viii. 31 (1889). Frequent in swampy woods.

P. mutabile Scribn. & Sm. Southampton County: dry sandy oak and pine woods northeast of Cypress Bridge, *F. & L.*, nos. 6021 and 6022. See p. 339 and map 15.

Extension inland from Cape Henry.

*P. hians Ell. Southampton County: sandy alluvial bottomlands of Three Creek, Drewryville, *F. L. & S.*, no. 5594; open sandy borders of pools and depressions, bottomland of Nottoway River, Courtland, *F. & L.*, no. 6479. See pp. 332 and 359.

*P. hemitomon Schultes. Sussex County: dominant at margin of sandy and peaty depression (exsiccated shallow pond), about 4 miles northwest of Homeville, *F. & L.*, no. 5985. See p. 338 and map 14.

*Miscanthus sinensis Anderss. Isle of Wight County: sandy roadside near Walters, *F. & L.*, no. 7656. Nansemond County: locally abundant on sandy roadside north of Factory Hill, *F. & L.*, no. 6757.

*Andropogon Mohrii Hackel. Prince George County: argillaceous and siliceous boggy depression, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6758. See p. 364.

A. virginicus L., var. tenuispatheus (Nash.) Fern. & Grisc., forma hirsutior (Hackel) Fern. & Grisc. Isle of Wight County: moist or sphagnous depressions in sandy pine barrens, south of Zuni, *F. & L.*, no. 6760.

Extension inland from Northampton County.

*A. Elliottii Chapm., var. gracilior Hackel. Nansemond County: dry sandy woods, Factory Hill, *F. & L.*, no. 6761. See p. 363.

Cyperus filiculmis Vahl, var. oblitus Fern. & Grisc. Isle of Wight County: dry sandy pine barrens south of Zuni, *F. G. & L.*, no. 6525. See p. 354.

Extension inland from Princess Anne County.

C. retrorsus Chapm., var. Nashii (Britton) Fern. & Grisc. Southampton County: dry sandy oak and pine woods northeast of Cypress Bridge, *F. & L.*, no. 6044. See p. 339.

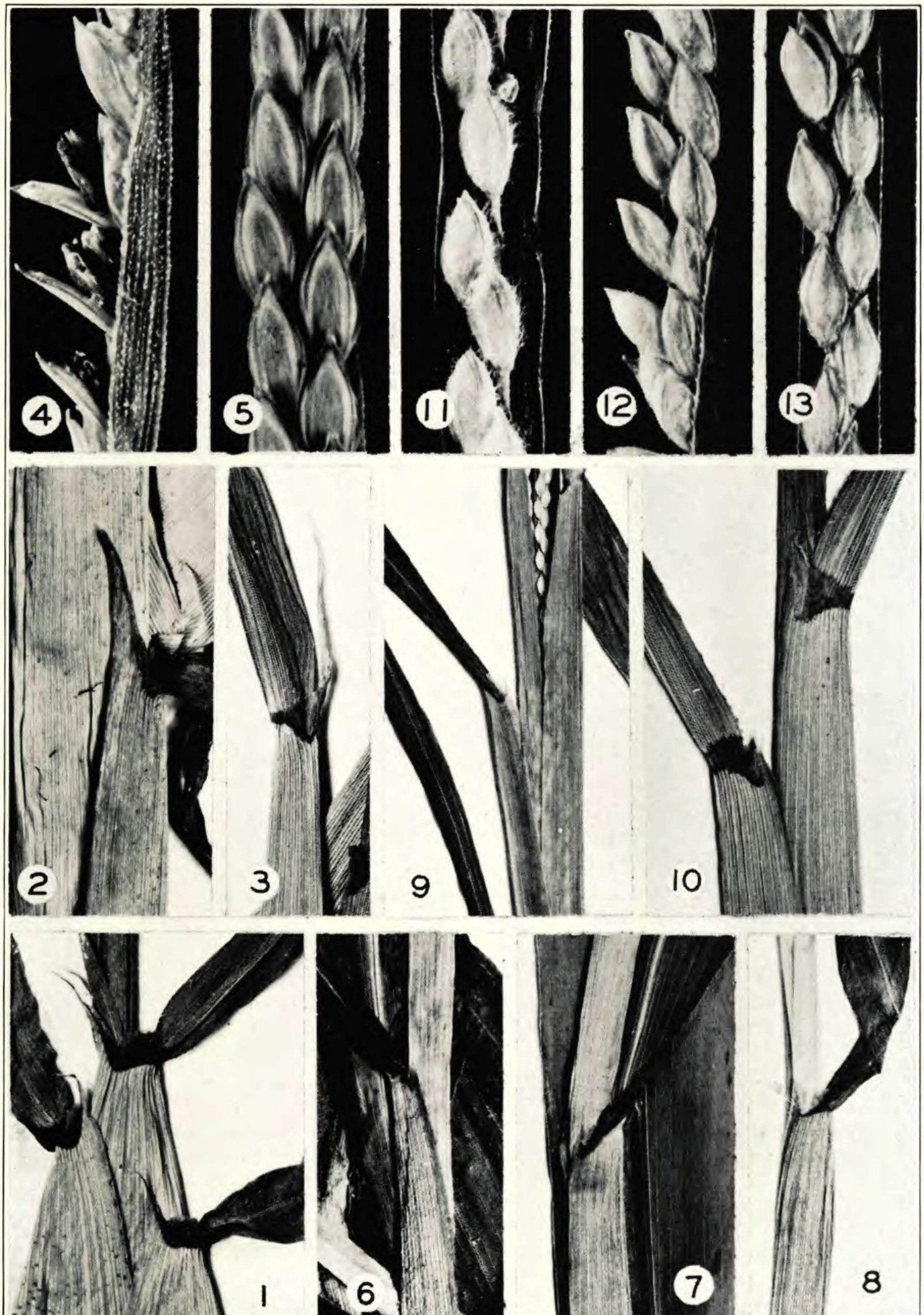

Photo. E. C. Ogden.

PASPALUM REPENS: FIGS. 1–3, summits of leaf-sheaths, × 2: FIG. 1, from Paraguay; FIG. 2, from Brasil; FIG. 3, from Venezuela. FIGS. 4 and 5, spikelets, × 10: FIG. 4, from Paraguay; FIG. 5, from Brasil.

P. FLUITANS: FIGS. 6–10, summits of leaf-sheaths, × 2: FIG. 6, from Missouri; FIG. 7, from Illinois; FIG. 8, from Indiana; FIG. 9, from Virginia; FIG. 10, from Florida. FIGS. 11–13, spikelets, × 10: FIG. 11, from Florida; FIG. 12, from Illinois; FIG. 13, from Virginia.

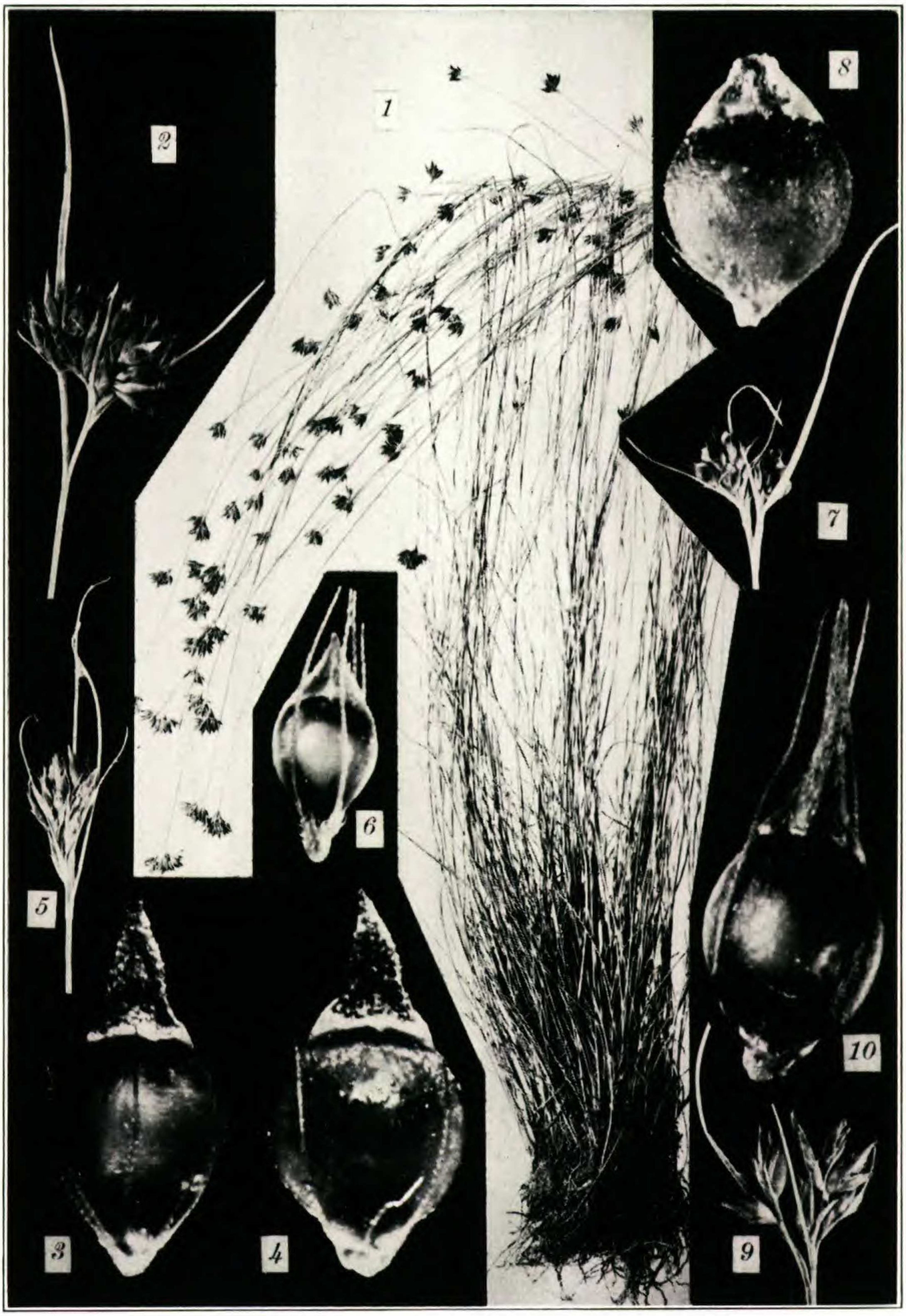

Photo. E. C. Ogden.

RYNCHOSPORA TRICHOPHYLLA: FIG. 1, portion of TYPE, × ⅖; FIG. 2, inflorescence, × 2; FIGS. 3 and 4, achenes, × 20.

R. FILIFOLIA: FIG. 5, inflorescence, × 2, from ISOTYPE; FIG. 6, achene, × 20.

R. WRIGHTIANA: FIG. 7, inflorescence, × 2, from Virginia; FIG. 8, achene, × 20.

R. FUSCOIDES: FIG. 9, inflorescence, × 2, from Florida; FIG. 10, achene, × 20.

Extension inland from Cape Henry.

C. GLOBULOSUS Aubl. (*C. echinatus* (Ell.) Wood). ISLE OF WIGHT COUNTY: sandy waste ground and roadsides, Lee's Mill, *F. & L.*, no. 6785. See p. 362. For discussion of this species see Fernald & Griscom, RHODORA, XXXVII. 154 (1935).

*ELEOCHARIS ACICULARIS (L.) R. & S. SOUTHAMPTON COUNTY: open sandy borders of pools and depressions, bottomland of Nottoway River, Courtland, *F. & L.*, no. 6535. See p. 359.

E. OBTUSA (Willd.) Schultes, var. JEJUNA Fern. SOUTHAMPTON COUNTY: sandy alluvial bottomland of Nottoway River, Courtland, *F. & L.*, no. 6786.

Extension inland from Princess Anne County.

E. OBTUSA, var. ELLIPSOIDALIS Fern. ISLE OF WIGHT COUNTY: open sandy swale, Boaz, *F. & L.*, no. 6047; sandy roadside ditch south of Zuni, *F. G. & L.*, no. 6533. SOUTHAMPTON COUNTY: argillaceous ditch south of Sebrell, *F. & L.*, no. 6046.

Extension south from the Williamsburg region. The Sebrell material is very obviously perennial, with stout old caudices.

SCIRPUS DIVARICATUS Ell. Very characteristic of alluvial bottomlands northward to PRINCE GEORGE COUNTY. See p. 330 and MAP 4.

HEMICARPHA MICRANTHA (Vahl) Britton. SOUTHAMPTON COUNTY: open sandy borders of pools and depressions, bottomland of Nottoway River, Courtland, *F. & L.*, no. 6540. See p. 359.

LIPOCARPHA MACULATA (Michx.) Torr. Open alluvium, ditches, etc., frequent in SUSSEX, ISLE OF WIGHT and SOUTHAMPTON COUNTIES, often with and easily confused with CYPERUS DENSICAESPITOSUS Mattf. & Kükenth. (*Kyllinga pumila* Michx.). See p. 359.

*RYNCHOSPORA DODECANDRA Baldw. PRINCE GEORGE COUNTY: argillaceous and siliceous swale south of The Crater, *F. L. & S.*, no. 5652. See p. 328.

R. GRACILENTA Gray. Frequent in damp or peaty depressions or in low pinelands, SUSSEX, PRINCE GEORGE and DINWIDDIE COUNTIES.

R. GRACILENTA, var. DIVERSIFOLIA Fern. Less general. PRINCE GEORGE COUNTY: sphagnous boggy swale southeast of Petersburg, at head of Poo Run, *F. & L.*, no. 6060. SUSSEX COUNTY: sandy and peaty depression (exsiccated shallow pond), about 4 miles northeast of Homeville, *F. & L.*, no. 6061. ISLE OF WIGHT COUNTY: wet peaty margin of pine woods about 3 miles southeast of Zuni, *F. & L.*, no. 6064.

Extension inland from Princess Anne County.

*RYNCHOSPORA **trichophylla**, sp. nov. (TAB. 475, FIG. 1–4), planta densissime caespitosa laxa, culmis filiformibus laevissimis laxe diffusis 1.5–6 dm. longis; foliis vix 1 mm. latis involutis; cymis corymbiformibus 1 vel 2 erectis, terminalibus 6–15 mm. latis laxis;

spiculis brunneis oblongo-lanceolatis 4–4.3 mm. longis subsessilibus; squamis exterioribus oblongo-ovatis obtusis cuspidatis, interioribus ellipticis subacutis; achaeniis planis rotundato-obovatis lucidis 1.8–2 mm. longis 1.4–1.5 mm. latis; setis antrorse barbellatis quam achenium brevioribus vel eum fere aequantibus; tuberculis albidis anguste deltoideis acutis 1–1.3 mm. longis.—Virginia: sandy and peaty depression (exsiccated shallow pond), west of Jerusalem Plank Road, about 4 miles northwest of Homeville, Sussex County, July 19 and 20, 1936, *Fernald & Long*, nos. 6063 (type in Gray Herb., isotype in Herb. Phil. Acad.), 6081. See p. 337.

Rynchospora trichophylla, in its promptly involute and delicately subcapillary leaves and small cymes, closely resembles several other species of the Coastal Plain of the eastern United States, especially *R. gracilenta* Gray, *R. Wrightiana* Boeckl., *R. filifolia* Torr., *R. distans* (Michx.) Vahl and *R. fuscoides* C. B. Clarke. From *R. gracilenta*, illustrated in Rhodora, xxxvii. t. 390 (1935) it differs at once in its very short perianth-bristles, which ally it with *R. Wrightiana*. The latter, however, (figs. 7 and 8) has smaller spikelets (2–3.5 mm. long) and achenes, with the round-tipped tubercle only about 0.5 mm. long. *R. filifolia* (figs. 5 and 6), likewise, has smaller spikelets, its perianth-bristles greatly exceed the very small (1–1.3 mm. long) achene, and its broadly triangular short tubercle is serrulate. *R. trichophylla* has the achene and short perianth-bristles of the southern *R. distans*, but its spikelets and its tubercles are very much longer than in the plant currently passing as *R. distans*. In size and shape of achenes *R. trichophylla* also suggests *R. fuscoides* (figs. 9 and 10); but the latter species has long bristles and a very prolonged and serrulate tubercle. I am unable to place the plant here described with any defined species.

Although *Rynchospora trichophylla* is as yet known from only a single locality it is presumably of broader range. The station where it occurs, along with several other plants which we met nowhere else in Virginia, is the last undisturbed remnant (of perhaps an acre) of what originally must have been a shallow boggy depression or pond extending over probably a hundred acres of lowland.

In our experience the slender-leaved species of *Rynchospora* were singularly restricted in their occurrence from Chesterfield and Prince George Counties to the North Carolina line. Usually a single such species characterizes each undisturbed depression; only rarely were two together. *R. rariflora* (Michx.) Ell., not closely related to the others, is common; so is *R. gracilenta* or its coarser var. *diversifolia* Fernald. But *R. Wrightiana*, to which *R. trichophylla* is most closely

related, was found in only two of the full dozen such depressions examined, one in Chesterfield County, the other in southern Sussex, several miles south of the station of *R. trichophylla.* Subsequently *R. distans* (Michx.) Vahl was found at a single station in Isle of Wight County, there associated with many species elsewhere unknown in Virginia. The evident localization of the three latter species in Virginia is indication that *R. trichophylla*, like *R. Wrightiana* (West Indies and Florida to Princess Anne and Chesterfield Counties, Virginia), will probably be found to have a broad distribution.

R. MICROCEPHALA Britton. Frequent in peaty depressions and borders of swampy woods, from PRINCE GEORGE COUNTY southward and southeastward.

R. WRIGHTIANA Boeckl. CHESTERFIELD COUNTY: exsiccated argillaceous swale west of Petersburg Turnpike, north of Swift Creek, *F. & L.*, no. 6084. SUSSEX COUNTY: depressions in argillaceous field north of Littleton, *F. & L.*, no. 6085. See p. 344.

Extension inland from Princess Anne County.

R. RARIFLORA (Michx.) Ell. Frequent in peaty depressions in PRINCE GEORGE and ISLE OF WIGHT COUNTIES, the culms varying from 0.5–6 dm. long, the cymes with 1 to 10 spikelets. See p. 326.

Inland extension from Princess Anne County.

R. CYMOSA Ell., var. GLOBULARIS Chapm. SUSSEX COUNTY: sandy and peaty depression (exsiccated shallow pond), about 4 miles northwest of Homeville, *F. & L.*, no. 6071; depression in sandy field, southwest of Burt, *F. & L.*, no. 6072.

Extension inland from Princess Anne County.

*R. HARVEYI W. Boott. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5647, very scarce. See p. 328.

*R. DISTANS (Michx.) Vahl. ISLE OF WIGHT COUNTY: moist or sphagnous depressions in sandy pine barrens, south of Zuni, *F. G. & L.*, nos. 6544 and 6545. See p. 356.

*R. TORREYANA Gray. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depression southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5658, *F. & L.*, no. 6075; sandy and peaty swale southeast of Prince George, *F. L. & S.*, no. 5659; argillaceous and siliceous boggy depression north of Gary Church, *F. L. & S.*, no. 5660. SUSSEX COUNTY: sandy and peaty depression (exsiccated shallow pond), about 4 miles northwest of Homeville, *F. & L.*, no. 6076; depressions in pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6077. See p. 326. MAP 32.

R. CADUCA Ell. SUSSEX COUNTY: sandy and peaty depression (exsiccated shallow pond), about 4 miles northwest of Homeville,

F. & L., no. 6092; wet sandy thicket, Burt, *F. & L.*, no. 6093. See pp. 338 and 342.

Extension inland from Norfolk County.

Scleria ciliata Michx., var. **Elliottii** (Chapm.), comb. nov. *S. Elliottii* Chapm., Fl. So. U. S. 531 (1860). *S. pauciflora*, δ. *Elliottii* Wood, Bot. and Fl. issue of 1873: 368 (1873); Britt. in Ann. N. Y. Acad. Sci. iii. 234 (1885).

Typical *Scleria ciliata, slender, with leaves but 1–2.5 mm. wide and soon revolute in drying, and with sparse fascicles, smooth or smoothish scales and very short ciliation of the bracts, is rare so far north as Virginia. Our only collection is from Isle of Wight County: dry sandy woods south of Zuni, *F. & L.*, no. 6548.

Var. Elliottii, coarser, with flat leaves 3–6 mm. wide, fuller and more crowded inflorescences, pubescent scales and almost fimbriate-ciliate bract-bases, is occasional: Henrico County: exsiccated argillaceous swale, Libbie Avenue, Westhampton, *F. L. & S.*, no. 5664. Sussex County: sandy and peaty depression (exsiccated shallow pond) about 4 miles northwest of Homeville, *F. & L.*, no. 6100; dry sandy woods and clearings, same locality, *F. & L.*, no. 6101. Isle of Wight County: dry sandy woods south of Zuni, *F. & L.*, no. 6547. Nansemond County: about Suffolk, *Heller*, no. 969.

Although Core[1] cites two collections of *Scleria ciliata* from Virginia, it should be noted that he reduces *S. Elliottii* without qualification to it. One of his citations is the *Heller* collection, which is of characteristic var. *Elliottii;* the other a collection from the interior which I have not seen. In the Gray Herbarium typical slender *S. ciliata* is not represented from between southeastern Virginia and southern South Carolina.

S. pauciflora Muhl.

Since Core, in his *American Species of Scleria*, Brittonia, ii. no. 1 (1936), does not differentiate between the essentially glabrous typical *Scleria pauciflora* and the very pubescent var. *caroliniana*, it is worth while noting the ranges of the two. Of the 4 Virginia collections cited by Core, 3 are in the Gray Herbarium. Two of these are typical *S. pauciflora*, which seems to be the wide-spread plant of the state.

S. pauciflora (typical). Represented by specimens from James City, Henrico, Prince George, Sussex and Nansemond Counties; also Bedford County.

S. pauciflora, var. caroliniana (Willd.) Wood. Nansemond, Sussex and Prince George Counties, several collections.

[1] Core, *The American Species of Scleria*, Brittonia, ii. 67 (1936).

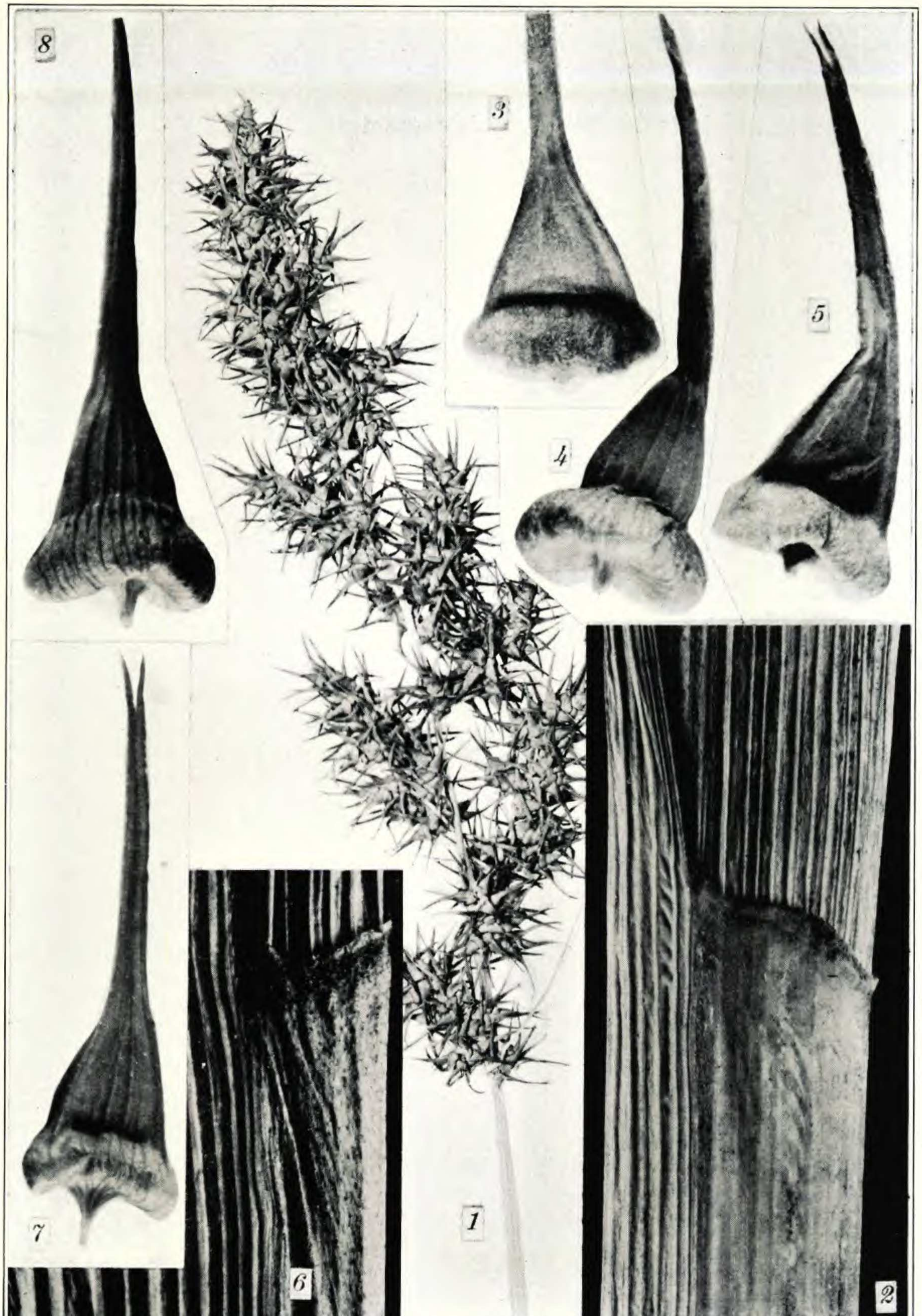

Photo. E. C. Ogden.

CAREX CRUS-CORVI: FIG. 6, inner band and summit of leaf-sheath, × 5, from Illinois; FIG. 7, inner face of perigynium, × 10, from Arkansas; FIG. 8, outer face of perigynium, × 10, from Arkansas.

Var. VIRGINIANA, all figs. from TYPE: FIG. 1, panicle, × 1; FIG. 2, inner band and summit of leaf-sheath, × 5; FIGS. 3 and 5, inner faces of perigynia, × 10; FIG. 4, outer face of perigynium, × 10.

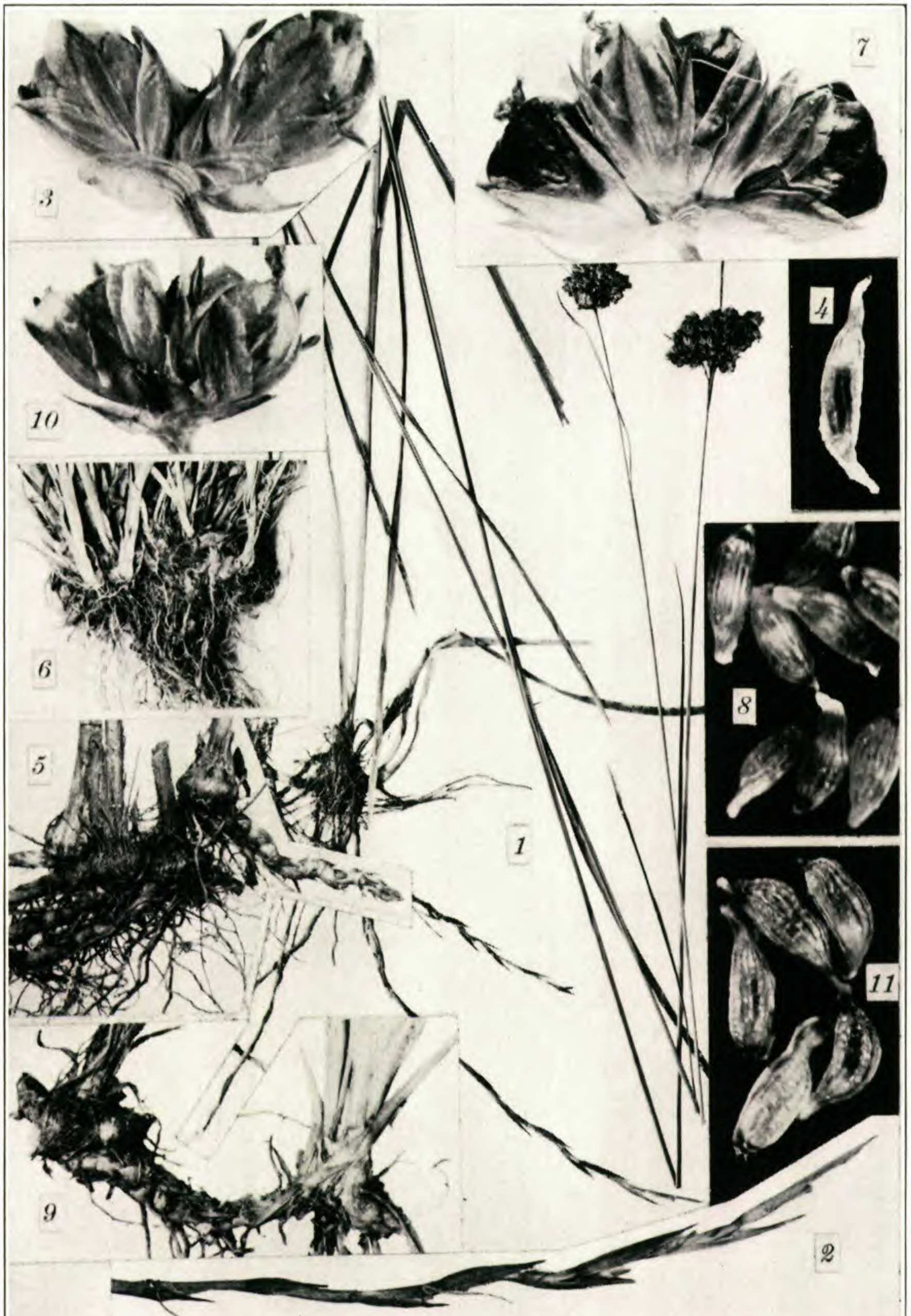

Photo. E. C. Ogden.

JUNCUS LONGII: FIG. 1, TYPE, × ⅖; FIG. 2, tip of stolon, × 1; FIG. 3, young fruits, × 8; FIG. 4, seed, × 40.

J. MARGINATUS: FIG. 5, base, showing stolon, × 1, from Virginia; FIG. 6, base of cespitose plant, × 1, from Maine; FIG. 7, fruits, × 8, from Virginia; FIG. 8, seeds, × 40, from Nova Scotia.

J. BIFLORUS: FIG. 9, rhizome, × 1, from Georgia; FIG. 10, fruits, × 8, from Virginia; FIG. 11, seeds, × 40, from Massachusetts.

S. SETACEA Poir. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6787. See p. 363.

*CAREX CRUS-CORVI Shuttlew., var. **virginiana**, var. nov. (TAB. 476, FIG. 1–5), foliis subcoriaceis albido-glaucis, vaginis firmis albidis vix rubro-punctatis ore firmo; paniculis griseo- vel glauco-viridibus; squamis albidis; perigyniis glauco-viridibus vix flavescentibus dorso obsolete paucinerviis ventre enerviis.—Rich alluvial bottomlands, Southampton County, VIRGINIA: sandy alluvium, bottomlands of Three Creek, Drewryville, June 22 and 23, 1936, *Fernald, Long & Smart*, no. 5677 (TYPE in Gray Herb.; ISOTYPES in Herbs. Phil. Acad. and Univ. Richmond); wooded bottomland of Meherrin River, above Haley's Bridge, June 23, 1936, *Fernald, Long & Smart*, no. 5956. See p. 332 and MAP 9.

It was, naturally, very surprising to find *Carex crus-corvi*, a characteristic plant of the Mississippi Basin and of the Gulf Coastal Plain eastward to the Apalachicola in northwestern Florida, abundantly represented on bottomlands of the Inner Coastal Plain of Virginia, isolated from the west by the full breadth of the Appalachian Upland and from the south by a distance of about 600 miles. In these rich bottoms, with their abundant beds of fossil shells and consequent supply of calcium, many other plants of the rich interior are found (see p. 323) but ordinarily their isolation is not so complete. *Carex crus-corvi* is one of the most distinct and conspicuous members of the genus. If it occurs in the alluvium of the Appalachian Valley, the Blue Ridge and the Piedmont (between the Blue Ridge and the Coastal Plain) or if it is found along the east-flowing rivers from northern Florida to Virginia it has not been reported, whereas plenty of small and inconspicuous species are there well known.

Typical *Carex crus-corvi* (FIGS. 6–8) is a less glaucous plant than var. *virginiana*, with less coriaceous leaves, the ventral band of the sheath, to quote Mackenzie's characterization in the North American Flora, "thin, strongly purplish-dotted . . . not thickened . . . at mouth." In var. *virginiana* the thickish white and usually undotted band (FIG. 2) is firm to the orifice and there somewhat thickened. The panicle and mature perigynia of typical *C. crus-corvi* are yellowish-green or yellowish-brown; the scales usually with brownish sides; the outer face of the perigynium (FIG. 8) is prominently nerved quite over the bulbous base, the inner face (FIG. 7) either nerved or nerveless. In var. *virginiana* the panicle is grayish- or bluish-green, the scales whitish, the outer face of the grayish-green perigynium

(fig. 4) only obscurely nerved and with the conspicuous whitish bulbous base scarcely nerved, the inner face (figs. 3 and 5) nerveless, and the stipe is shorter than in typical *C. crus-corvi*.

Completely isolated, apparently, and with some striking characters to separate it from the continental type, *Carex crus-corvi*, var. *virginiana* might be considered by some a distinct species. The differences are not, however, always so sharp as shown in the selected figures. Sometimes inland plants of typical *C. crus-corvi* have subcoriaceous leaves, sometimes the purple dots of the sheath are obscure, and the inner face of the perigynium may sometimes be nerveless. As pronounced and isolated derivatives from a common ancestral type the two plants are closely related but long-enough separated to have made a beginning toward specific differentiation.

C. striatula Michx. Sussex County: dry sandy hickory and oak woods, Burt, *F. & L.*, no. 6111. See p. 342.

*C. crebriflora Wieg. Southampton County: sandy alluvial bottomlands of Three Creek, Drewryville, *F. L. & S.*, no. 5682. See p. 332.

C. oxylepis Torr. & Hook. Chesterfield County: wooded river-swamp along Appomattox River, near Hopewell, *F. L. & S.*, no. 5684. Collected by Grimes; probably in most alluvial soils. Maturing early and easily overlooked.

*C. Barrattii Schwein. & Torr. Sussex County: swampy depression in pineland, about 4 miles northwest of Waverly, *F. G. & L.*, no. 6550. See p. 353 and map 25.

C. Joorii Bailey. Characteristic of the bottomlands and wooded swamps northward at least to New Kent County. See p. 348.

*C. vestita Muhl. Henrico County: exsiccated argillaceous swale, Libbie Avenue, Westhampton, *F. L. & S.*, no. 5686. Prince George County: swampy woods west of New Bohemia, *F. L. & S.*, no. 5687. See p. 328.

The southern colonies of *Carex vestita* are in decidedly moist or even wet habitats, whereas in New England and New York the plant is usually, though not always, in dry sand and gravel. Mackenzie, in the North American Flora, gives the habitat "Open dry sandy woods and thickets," reflecting his experience with the plant in the latitude of New York. I have sought in vain for any clear morphological differences to separate the two series.

*C. Collinsii Nutt. Sussex County: spring-fed, wooded, argillaceous sphagnous bog, headwaters of Jones Hole Swamp, north of Coddyshore, *F. & L.*, no. 6118. See p. 336 and map 12.

*C. BULLATA Schkuhr. PRINCE GEORGE COUNTY: bushy swamp southeast of Petersburg, at head of Poo Run, *F. & L.*, no. 6119. See p. 334.

C. FRANKII Kunth. HENRICO COUNTY: border of wet deciduous woods, Curles Neck Farm, *F. L. & S.*, no. 5691. SUSSEX COUNTY: rich low woods, near Moore's Mill, *F. & L.*, no. 6115. See p. 330.

C. SQUARROSA L. Alluvial woods and river-swamps, frequent from CHESTERFIELD COUNTY to southwestern SUSSEX COUNTY. See pp. 330 and 342.

C. TYPHINA Michx. Alluvial woods and river-swamps, general from PRINCE GEORGE COUNTY to SOUTHAMPTON COUNTY. See pp. 330 and 342.

C. GRAYII Carey. SUSSEX COUNTY: with the two latter in sandy alluvial woods, bottomland of Nottoway River, southwest of Burt, *F. & L.*, no. 6117. See p. 342 and MAP 19.

C. LOUISIANICA Bailey. Abundant in alluvial woods and river-swamps. See p. 330.

ERIOCAULON DECANGULARE L. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6790. See p. 363.

LACHNOCAULON ANCEPS (Walt.) Morong. DINWIDDIE COUNTY: boggy woods near head of Old Town Creek, southwest of Petersburg, *F. & L.*, no. 6120. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions about 3 miles southeast of Petersburg, on headwaters of Blackwater River, *F. L. & S.*, no. 5698. ISLE OF WIGHT COUNTY: wet peaty margin of pine woods about 3 miles southeast of Zuni, *F. & L.*, no. 6121. See pp. 328 and 347.

Recorded by Pursh from Virginia, as *Eriocaulon villosum* Michx.

*XYRIS TORTA Sm., var. **macropoda** var. nov., bulbo castaneo lucido 1–2 cm. diametro 1.5–2 cm. alto; scapis solitariis vel binis 3–6 dm. altis; spicis anguste ellipsoideo-ovoideis subacutis 0.9–1.8 cm. longis; sepalis lateralibus apice vix barbellulatis.—Peaty and boggy depressions in the coastal plain, southeastern VIRGINIA: exsiccated argillaceous swale, about 3 miles southeast of New Bohemia, Prince George County, July 28, 1936, *Fernald & Long*, no. 6131, August 22, 1936, *Fernald, Griscom & Long*, no. 6562 (TYPE in Gray Herb.; ISOTYPES in Herb. Phil. Acad., Herb. Griscom and elsewhere); siliceous and argillaceous swaley thicket south of Zuni, Isle of Wight County, August 20, 1936, *Fernald, Griscom & Long*, no. 6561. See pp. 345 and 354.

Typical *Xyris torta* has much smaller and commonly paler and more numerous bulbs (4–10 mm. in diameter, 5–12 mm. high) commonly clustered and forming tufts (on old crowns up to 50 scapes); its spikes are thicker-ovoid, 5–12 mm. long and rounded at the summit; its lateral sepals usually have a few trichomes tufted at the tip. Typical

X. torta occurs from Massachusetts to Minnesota, south to Virginia, the mountains of Georgia, Arkansas and Texas. In southeastern Virginia it is occasional and some of our collections show transition to var. *macropoda*. Some of the material from Arkansas and Texas suggests the latter but its bases are too poorly collected for positive identification.

My reasons for treating the more northern and inland plant as typical *X. torta* are the facts that the original material was collected by Kalm and that Smith emphasized the "globose" and obtuse spikes.

*X. AMBIGUA Beyrich. PRINCE GEORGE COUNTY: sphagnous boggy swale southeast of Petersburg, at head of Poo Run, *F. & L.*, no. 6122; argillaceous and siliceous boggy depression north of Gary Church, *F. L. & S.*, no. 5700, *F. & L.*, no. 6560. SUSSEX COUNTY: spring-fed, wooded, argillaceous sphagnous bog, headwaters of Jones Hole Swamp, north of Coddyshore, *F. & L.*, no. 6126; swampy depression in pineland, about 4 miles northwest of Waverly, *F. G. & L.*, no. 6558. ISLE OF WIGHT COUNTY: peaty swales and margins of woods south of Zuni, *F. & L.*, no. 6124, *F. G. & L.*, no. 6559. See pp. 335 and 354.

Xyris ambigua and *X. difformis* are the two large species of *Xyris* throughout southeastern Virginia. *X. ambigua* has firm and opaque leaves and the lateral sepals with ciliolate keel; *X. difformis* has softer and (when dry) translucent leaves and the keel of the lateral sepals toothed rather than ciliolate.[1]

*X. CURTISSII Malme (*X. neglecta* Small). SUSSEX COUNTY: spring-fed, wooded, argillaceous sphagnous bog, headwaters of Jones Hole Swamp, north of Coddyshore, *F. & L.*, nos. 6125 and 6791. See p. 336.

*X. FLEXUOSA Muhl. (*X. arenicola* Small). ISLE OF WIGHT COUNTY: dry sandy pine barrens south of Zuni, *F. G. & L.*, no. 6563, *F. & L.*, no. 6792. See p. 356.

*JUNCUS ABORTIVUS Chapm. ISLE OF WIGHT COUNTY: moist or sphagnous depressions in sandy pine barrens south of Zuni, *F. G. & L.* no. 6566, the specimens distributed as *J. pelocarpus*, var. *crassicaudex* Engelm., the original name of the plant. See p. 356 and MAP 28.

J. ELLIOTTII Chapm. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5705. SUSSEX COUNTY: depressions in pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6139.

[1] *Xyris elata* Chapman has been reported by Mrs. Erlanson from Queen's Creek, York County, Virginia. It has also been reported from Cape May, New Jersey. The Queen's Creek plant, as represented in the Gray Herbarium, like Grimes's plant from Poplar Springs, Charles City County, is *X. platylepis* Chapman, a species with very characteristic large bulb, with the lowermost leaves reduced to short and firm bulb-scales. The Cape May plant is to me characteristic *X. Smalliana* Nash (not the northern *X. Congdoni* Small) at the only station yet known north of North Carolina.

Extensions inland from Princess Anne and Elizabeth City Counties.

*J. BRACHYCARPUS Engelm. PRINCE GEORGE COUNTY: exsiccated argillaceous swale about 3 miles southeast of New Bohemia, *F. & L.*, no. 6137. See pp. 346 and 339 and MAP 21.

*J. DIFFUSISSIMUS Buckley. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5707. ISLE OF WIGHT COUNTY: ditch, Carrsville, June 15, 1927, *Wiegand & Manning*, no. 750. See p. 328. MAP 33.

*JUNCUS (§ GRAMINIFOLII) **Longii**, sp. nov. (TAB. 477, FIG. 1–4), planta valde stolonifera; rhizomate horizontaliter elongato gracile et flexile, stolonibus subterraneis chordiformibus numerosis deinde 0.5–2 dm. longis 1.5–3 mm. crassis paleas lanceolatas fuscas hyalinas gerentibus, internodiis 0.5–1 cm. longis; caulibus foliisque ut in *J. marginato* Rostk.; caulibus 1–3 firmis gracilibus 4–7.5 dm. altis; foliis coriaceis atroviridibus angustissime linearibus; inflorescentiis compactis hemisphericis vel oblatis 1–3 cm. altis 1–4 cm. latis; glomerulis 2–4-floris; bracteis florum ovatis hyalinis mucronatis; floribus 2.5–3.5 mm. longis olivaceo-brunneis; sepalis (tepalis externis) ovato-lanceolatis acuminato-subulatis olivaceis; petalis (tepalis internis) elliptico-oblongis obtusis olivaceo-brunneis margine late albido-hyalinis; staminibus 3; antheris purpureis 0.8 mm. longis filamentis duplo brevioribus deciduis; capsulis perianthium paullo superantibus ellipsoideo-obovoideis nitidis imperfecte triseptatis; seminibus luteis lanceolato-fusiformibus 8–12-costatis apicibus rufescentibus inaequaliter albido-caudatis.—Damp or exsiccated argillaceous depressions, southeastern VIRGINIA: argillaceous and siliceous boggy depression about 3 miles southeast of Petersburg, on headwaters of Blackwater River, Prince George County, June 25, 1936, *Fernald, Long & Smart*, no. 5711; argillaceous and siliceous boggy depression north of Gary Church, Prince George County, June 25, 1936, *Fernald, Long & Smart*, no. 5712; exsiccated argillaceous swale about 3 miles southeast of New Bohemia, Prince George County, July 28, 1936, *Fernald & Long*, no. 6148; boggy woods near head of Old Town Creek, southwest of Petersburg, Dinwiddie County, July 22, 1936, *Fernald & Long*, no. 6145; damp bushy pasture, southwest of Petersburg, Dinwiddie County, July 22, 1936, *Fernald & Long*, no. 6146; spring-fed wooded sphagnous bog, Coddyshore, Sussex County, July 20, 1936, *Fernald & Long*, no. 6144 (TYPE in Gray Herb.; ISOTYPES in Herb. Phil. Acad. and elsewhere); depression in argillaceous field north of Littleton, Sussex County, July 22, 1936, *Fernald & Long*, no. 6147. See pp. 328 and 336.

An old specimen without base, collected "*In vicinis* Washington, D. C." by *Lester F. Ward*, August 5, 1877, is characteristic *Juncus Longii*. The data at hand fail to show whether it came from Maryland, the District of Columbia or Virginia.

Juncus Longii is at once distinguished from its nearest allies, *J. marginatus* Rostk. and *J. biflorus* Ell., by its characteristic base, *J. marginatus* having a short and thick rhizome (FIG. 5) which often becomes densely knotty, forming tussocks (FIG. 6). *J. biflorus*, likewise, has a very stout and knotty rhizome (FIG. 9). In *J. biflorus* the long anthers harden and persist and become conspicuous after anthesis (FIG. 10), in *J. marginatus* (FIG. 7) and *J. Longii* the short anthers shrivel and drop or become hidden after anthesis. In both *J. biflorus* (FIG. 10) and *J. marginatus* (FIG. 7) the bracts below the flowers are firm and lance-attenuate or -subulate; in *J. Longii* (FIG. 3) they are thinner, broader and less tapering. In both *J. biflorus* (FIG. 10) and *J. marginatus* (FIG. 7) the green center of the petal is clearly separated from the hyaline margin by a brown band; in *J. Longii* (FIG. 3) this band is wanting. In *J. biflorus* the reddish-castaneous seeds (FIG. 11) are ellipsoid-fusiform, 10–16-ribbed and with usually dark-colored short tails; in *J. marginatus* (FIG. 8) the seeds are paler-brown, plumper many-ribbed and with short tails or apiculations; but in *J. Longii* the yellow seeds (FIG. 4) are very slender, fewer-ribbed and with definite white tails.

Juncus biflorus, with short and thick rhizomes with at most thick finger-like stolons, is characteristic of damp sands, peats, ditches and other such habitats, where elongation of stolons might ordinarily be looked for; *J. marginatus*, likewise, is in damp habitats, not unfavorable to elongation of rhizomes and stolons. But all the habitats where we found the slenderly stoloniferous *J. Longii* were, during the dry early summer of 1936, dried and sun-baked clays, which, although in winter and early spring boggy or inundated, at the period of most active vegetative development are almost arid (at least severely exsiccated).[1] The development in such conditions of slender and cord-like stolons is a clear indication that *J. Longii* is far-removed from *J. biflorus* and *J. marginatus*.

TOFIELDIA RACEMOSA (Walt.) BSP. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5713, *F. & L.*, no. 6150. SUSSEX COUNTY: Waverly, July 20, 1891, *A. B. Seymour*, no.

[1] In August, at one of the characteristic stations of *Juncus Longii*, a depression which in southeastern Virginia passes as a "bog" and which is Sphagnum-carpeted and inhabited by *Sarracenia flava* L. and other "bog" plants, we attempted to dig the bases of *Xyris ambigua*. The plastic clay substratum was so hard and sun-baked that we promptly broke the oak handle of a botanizing pick. It is through such a soil that the slender and flagelliform stolons of *Juncus Longii* creep!

13; depressions in pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6151. See pp. 326 and 347.

AMIANTHIUM MUSCAETOXICUM (Walt.) Gray. NANSEMOND COUNTY: dry sandy pine woods south of Factory Hill, *F. & L.*, no. 6794. See p. 364.

ZIGADENUS GLABERRIMUS Michx. SUSSEX COUNTY: depressions in pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6152. ISLE OF WIGHT COUNTY: moist or sphagnous depressions in sandy pine barrens, south of Zuni, *F. G. & L.*, no. 6569. See pp. 347, 356 and 361.

ALETRIS AUREA Walt. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5719; similar habitat, on headwaters of Blackwater River, *F. L. & S.*, no. 5720. SUSSEX COUNTY: depressions in pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6161. See pp. 326, 347 and 353.

*A. AUREA × FARINOSA. A few plants with the two parents, the raceme denser and with longer perianths than in *A. aurea*, the flowers burnt-orange or saffron in color.—PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5721. See p. 328.

*SMILAX HERBACEA L., var. LASIONEURA (Hook.) DC. PRINCESS ANNE COUNTY: rich woods, Great Neck, *F. & G.*, no. 4357.

A plant of the interior, the range, under *Nemexia lasioneuron* (Hook) Rydb., given by Small: "Blue Ridge and more northern provinces, Ga. to Ala., Colo., Wyo., and Ont." On Great Neck associated with some other notable plants of the interior: *Menispermum canadense*, *Dentaria laciniata*, *Gentiana villosa*, *Erigeron pulchellus*, *Silphium atropurpureum* (MAP 42), *Senecio aureus*, etc.

S. HISPIDA Muhl. SURRY COUNTY: sandy thicket, Sunken Meadow Beach, *F. & L.*, no. 6797. See p. 365.

An inland and upland species, rare on the Coastal Plain.

DIOSCOREA QUATERNATA (Walt.) Gmel., var. **glauca** (Muhl.), comb. nov. *D. glauca* Muhl. Cat. 92 (1813), *nomen subnudum*, validated by Bartlett in U. S. Dept. Agr. Bur. Pl. Ind. Bull. no. 189: 10 and 13 (1910). HENRICO COUNTY: rich woods, Malvern Hill, *F. L. & S.*, no. 5731.

I can find no character of flower or fruit to separate *D. glauca*, as interpreted by Bartlett, from the green-leaved *D. quaternata*. The plants of southeastern Virginia may have the leaves green and glabrous beneath, typical *D. quaternata* (Williamsburg, *Grimes*, no. 3527), pale or slightly glaucous and quite glabrous beneath (our no. 5731 cited above) or pale beneath and also sparsely pilose (Williamsburg,

Grimes, no. 3526). Bartlett illustrates the rhizome of *D. glauca* as coarsely branched and contorted "often forked and with many short lateral branches equal in diameter to the rhizome, usually contorted and forming dense masses," while his description of typical *D. quaternata* assigns it "Rhizomes about 1 cm. in diameter, straight or sometimes forked, with few or no short lateral branches." Our material with leaves obviously pale beneath was most carefully dug. The specimen retained at the Gray Herbarium shows a strictly simple and rather slender rhizome nearly 2 dm. long, bearing the flowering stem of the current year and the stubs of stems of two preceding years. In other words, this material, good *D. glauca* in the pale lower leaf-surface, is good *D. quaternata* in its simple rhizome. The very large capsules, mostly 2.5–3 cm. long and definitely as long as or longer than broad (ellipsoid to obovoid) distinguish this species in fruit, and its seeds 1.8 cm. broad, with the translucent pale-brown wing broader than the orbicular embryo (5 mm. in diameter) clearly mark *D. quaternata* (including *glauca*) as a species. Unfortunately, Bartlett, with the assembled material before him, did not describe the seeds but he laid undue weight on the presence or absence of trichomes on stem or leaf, characters of much less stability than those of the seed.

*D. HIRTICAULIS Bartlett, l. c. 17 (1910). PRINCE GEORGE COUNTY: argillaceous and siliceous swale south of The Crater, *F. L. & S.*, no. 5730; argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6799. JAMES CITY COUNTY: sphagnous swamp at Longhill, 5 miles west of Williamsburg, *Grimes*, no. 3803. MAP 34.

Dioscorea hirticaulis strongly suggests the more pubescent-leaved extreme of *D. villosa* L. (*D. paniculata* Michx., at least as interpreted by Bartlett).[1] Its lower leaf-surfaces are more closely, almost velvety,

[1] Michaux's *Dioscorea paniculata*, including all *Dioscorea* known to him from "Canada ad Carolinam," can not be exactly identified without a photograph of Michaux's material, which I now await. I am interpreting *D. villosa*, in absence of a specimen in the Linnean Herbarium called by him *D. villosa*, as based on the Virginia (the left-hand one) plant of Clayton (or Gronovius) which he had before him. One Clayton specimen is of the plant long known as *D. villosa* (*D. paniculata*); another (on the right), mounted with it, *looks* like *D. hirticaulis*.

Mr. C. A. Weatherby, now in Europe, thus reports (two months since the preceding lines went into type) upon a comparison of specimens sent him: "as for *Dioscorea villosa*, the right-hand (upper specimen) on the Clayton sheet in the British Museum has the stem perfectly glabrous except for puberulate patches just above the axils; the rachis of the inflorescence is minutely scabrous; and the under surface of the leaves densely pubescent with short hairs. In size, shape and length, and length and distribution of pubescence your no. 6799 [*D. hirticaulis*] is an excellent match for them. In the left-hand specimen the leaves are young. The lower surface is rather densely pubescent along the veins and veinlets with very short hairs, distinctly shorter than

canescent-pilose and the blades are all relatively small. The name comes from the fact that there are a few short trichomes scattered along some internodes of the stem, these not occurring on the internodes of *D. villosa.* These characters alone would be of little significance; but the inflorescences and the seeds show points of undoubted importance. In *D. villosa* the staminate panicles, when fully developed, are lax, with slender internodes 1–4 mm. long separating the small glomerules of flowers; in *D. hirticaulis* the staminate panicles do not loosen, the slightly larger glomerules remaining subapproximate. The pistillate inflorescences (when well developed) of *D. villosa* are elongate and 5–18-flowered; those of *D. hirticaulis* much shorter and only 1–4-flowered. The capsules of the two are only slightly different: in *D. villosa* subglobose to short-obovoid, from about as long as broad to slightly shorter, 1.5–2.5 cm. long; in *D. hirticaulis* reniform to oblate-obovoid, barely as long as broad, 1.2–1.8 cm. long. The seeds (mature ones known to me only from our no. 6799, collected October 18) of *D. hirticaulis* furnish the best character. In *D. villosa* they are thin and hyaline, the very broad whitish to pale brown wing strongly contrasting with the dark oval embryo (3–5 mm. broad); in *D. hirticaulis* they are firm or subcoriaceous, uniformly dark brown, with a firm band extending from about the embryo nearly to the margin, the thin (but dark) wing only 1 mm. broad.

Unfortunately, most collected material of *Dioscorea* is without ripe fruit. In view of the strikingly different seeds of the three species which occur in eastern Virginia it will be important to secure good fruit of *D. floridana* Bartlett. Immature fruit of it, with the quite immature ellipsoid-obovoid capsules 3 cm. long, shows the young seeds to resemble those of *D. villosa* in their whitish hyaline broad margin but to have suborbicular embryos.

*D. VILLOSA L., forma **glabrifolia** (Bartlett), comb. nov. *D. paniculata*, var. *glabrifolia* Bartlett, l. c. 15 (1910.) *D. villosa glabrifolia* (Bartlett) W. Stone, Pl. So. N. J. 358 (1912). Our only Vir-

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in either specimen of *D. villosa* which you sent. The plant is otherwise glabrous except for puberulent patches at the axils. For good measure I looked up the Linnean specimen also, though I believe it is not the type. I suppose the one concerned is that labeled by Linnaeus, presumably by mistake, '6 K[alm] *sativa.*' It seems tobe good staminate *D. villosa* as we have understood it. Only a little of the lower leaf-surface shows; that little is rather densely pubescent with comparatively long hairs, most like those of the St. John specimen [no. 2650] from Long Island which you sent. The inflorescence is paniculate." Even though a part of the Clayton material was *D. hirticaulis*, the other part was apparently *D. villosa* as usually interpreted. It is better so to leave it.

ginia specimen from Prince George County: sandy and peaty swale southeast of Prince George, *F. L. & S.*, no. 5729.

Whereas *D. quaternata*, var. *glauca* seems to have a broad range outside that of *D. quaternata* (typical) and to satisfy the requirement of a geographic variety, *D. villosa*, forma *glabrifolia* is scattered through the range of the plant with lower leaf-surfaces pubescent.

*Hypoxis leptocarpa Engelm. & Gray. Southampton County: sandy alluvium of Three Creek, Drewryville, *F. L. & S.*, no. 5732; similar habitat, bottomland of Nottoway River, above and below Cypress Bridge, *F. & L.*, nos. 6163 and 6164. See pp. 331 and 341 and map 7.

H. micrantha Pollard. Prince George County: dry sandy pine woods about 3 miles southeast of Petersburg, on headwaters of Blackwater River, *F. L. & S.*, no. 5733. See p. 329.

Iris prismatica Pursh. Henrico County: exsiccated argillaceous swale, Libbie Avenue, Westhampton, *F. L. & S.*, no. 5735. Sussex County: depressions in pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6170. See p. 347.

Northward *Iris prismatica* is nearly coastal in range, but southward it takes to the Appalachian Upland. In southeastern Virginia it is well back on the Coastal Plain and in the Piedmont.

*Sisyrinchium arenicola Bicknell (*S. fibrosum* Bicknell). Sussex County: dry sandy hickory and oak woods, Burt, *F. & L.*, no. 6168. Isle of Wight County: dry sandy yellow pine and oak woods near Walters, *F. & L.*, no. 6169. Southampton County: dry sandy oak and pine woods northeast of Cypress Bridge, *F. & L.*, no. 6167. Noted elsewhere in these three counties. See p. 340.

After detailed study I am unable to separate the southern *Sisyrinchium fibrosum* from the northern *S. arenicola*. The two constitute a single species with a range wholly characteristic for many species.

*Canna flaccida Salisb. Isle of Wight County: thriving in rubbish (garden refuse) at border of swampy woods, String-of-Logs Pocoson, north of Windsor, *F. & L.*, no. 6172.

Habenaria blephariglottis (Willd.) Torr., var. conspicua (Nash) Ames. Isle of Wight County: moist or sphagnous depressions in sandy pine barrens, south of Zuni, *F. G. & L.*, no. 6574. See p. 356 and map 27.

Cleistes divaricata (L.) Ames. Prince George County: scattered in argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5742. See p. 326 and map 2.

Excessively rare north of Florida. Should be scrupulously guarded against extermination.

*Spiranthes ovalis Lindl. Henrico County: woods along stream, rare, campus of University of Richmond, Westhampton, October, 1932, *H. M. Walton.*

A thoroughly typical species of the interior of the United States (west of the Appalachian axis), here within the edge of the Piedmont bordering the Coastal Plain.

Ponthieva racemosa (Walt.) Mohr. Isle of Wight County: rich loamy wooded slope north of Walters, *F. G. & L.*, no. 6577. See pp. 356 and 362.

Malaxis floridana (Chapm.) Kuntze. Isle of Wight County: rich loamy wooded slope north of Walters, *F. G. & L.*, no. 6579. See p. 357.

Although *Malaxis floridana* has recently been placed in the synonymy of the West Indian *M. spicata* Swartz, I can hardly feel that they are identical. *M. floridana*, originally *Microstylis floridana* Chapman, from Apalachicola, is now known, as a local plant, from Florida to Virginia. Its details were beautifully shown by Mrs. Ames in Ames, Contrib. Ames Bot. Lab. no. 1, pl. vi (1904). She there correctly showed the resupinate lip as broadly cordate, with obtuse basal auricles and tapering gradually to the subacute apex. Chapman originally described the "lip round-auriculate-cordate, abruptly narrowed and entire at apex"—Chapm. Fl. So. U. S., 454 (1860). Morris & Eames, Our Wild Orchids, 352 (1929), from fresh material say "wide cordate, with pointed tip and pair of pronounced basal auricles partly embracing the column." In describing the lip of *M. floridana* Ames, l. c. 15, said "lip pale orange-vermilion, entire"; Morris & Eames say of the Virginia plant "central shield of lip orange, drying vermilion; margins and auricles yellow and more or less hyaline"; our own field note says "pale orange."

Nevertheless Swartz, giving a very detailed account of his *Malaxis spicata*, described the lip as yellow-green, 3-lobed with the median lobe longer, acuminate ("*Labellum luteo-viride* . . . superne adscendens trilobum, lobo medio longiore, acuminata."—Swartz. Fl. Ind. Oc. iii. 1442) and he so illustrated it. Fawcett & Rendle, Fl. Jam. i. 42, 43 (1910) question Swartz's account, saying "the lateral lobes are not evident", but they clearly describe the lip of the West Indian plant "lip broadly elliptical, with a prominent linear-oblong apical lobe." Drs. Lyman B. Smith and A. R. Hodgdon, who twice collected *M. spicata* in Cuba while we were getting *M. floridana* in Virginia, tell me that the lip is greenish (certainly not orange or vermil-

ion); and all the West Indian material which is in good condition shows a prolonged linear-oblong tip; and at each side a subtruncate or shoulder-like flange which might easily be taken as two short lateral lobes. Mr. Charles Schweinfurth suggests that these flanges are due to inrolling of the margin. That they occur in the broadly elliptical green lip of the West Indian plant and not in the broadly cordate-ovate orange to vermilion lip of the continental plant is surely significant.

HEXALECTRIS SPICATA (Walt.) Barnh. SUSSEX COUNTY: dry sandy hickory and oak woods, Burt, *F. & L.*, no. 6182. See p. 342 and MAP 18.

SALIX LONGIPES Shuttlew., var. VENULOSA (Anderss.) Schneider. NORFOLK COUNTY: boggy swale by Northwest River, near Northwest, *F. G. & L.*, no. 4624.

Recorded by Schneider from the Dismal Swamp.

QUERCUS STELLATA Wang., var. MARGARETTA (Ashe) Sarg. SUSSEX COUNTY: dry sandy woods, Burt, *F. & L.*, nos. 6189 and 6190.

Q. STELLATA Wang., var. BOYNTONI (Beadle) Sarg. SUSSEX COUNTY: shrubs 1–1.5 m. high at border of dry sandy woods, Burt, *F. & L.*, no. 6191. See p. 342.

Q. PRINOIDES Willd. SUSSEX COUNTY: dry sandy woods and thickets, north of Moore's Mill, *F. & L.*, no. 6188.

The only colony seen by us in southeastern Virginia.

*Q. VELUTINA Lam., var. MISSOURIENSIS Sarg. NANSEMOND COUNTY: dry sandy pine and oak woods south of Factory Hill, *F. & L.*, no. 6807. See p. 364.

Q. RHOMBICA Sarg. ISLE OF WIGHT COUNTY: moist or sphagnous depressions in sandy pine barrens, south of Zuni, *F. G. & L.*, no. 6585. SOUTHAMPTON COUNTY: sandy alluvial bottomlands of Three Creek, Drewryville, *F. L. & S.*, no. 5765.

Recorded by Sargent from the Dismal Swamp.

POLYGONUM TENUE Michx. ISLE OF WIGHT COUNTY: border of sandy yellow pine and oak woods north of Walters, *F. G. & L.*, no. 6588.

The only time noted by us on the Coastal Plain of Virginia.

*TOVARA VIRGINIANA (L.) Adans., var. **glaberrima**, var. nov., foliis utrinque glaberrimis vel deinde glabratis membranaceis; rhizomate gracile elongato.—Alluvial woods and bottomlands of Nottoway River system, Sussex, Southampton and Greensville Counties, VIRGINIA: siliceous and argillaceous alluvium bordering cypress swamp, bottomland of Nottoway River, above Cypress Bridge, *Fernald & Long*, no. 6201; rich low woods near Moore's Mill, July 19 and 25, 1936, *Fernald & Long*, no. 6202; sandy alluvial woods, bottom-

land of Nottoway River, southwest of Burt, July 25, 1936, *Fernald & Long*, no. 6203 (TYPE in Gray Herb., ISOTYPE in Herb. Phil. Acad.); moist clearing, bottomland of Three Creek, north of James River Junction, *Fernald, Griscom & Long*, no. 6591.

Typical *Tovara virginiana*, throughout its broad American range, has the rhizome heavy and knotty, often forming an unpressable mass, and its leaves are strigose above and often scabrous. The plant of the bottomlands of the Nottoway system is striking in its smooth foliage and the slender and cord-like rhizomes. See p. 341.

*POLYGONELLA POLYGAMA (Vent.) Engelm. & Gray. ISLE OF WIGHT COUNTY: open white sand in dry pine barrens, south of Zuni, *F. & L.*, no. 6809. PLATE 478, FIGS. 6–8.

A very localized station, the first known north of Wilmington, North Carolina. See p. 361.

The exact identity of *Polygonella polygama* needs clarification. Michaux originally collected the plant in dry sands somewhere in the Carolinas (in aridissimis Carolinae). From his seed the plant was grown in the Cels Garden near Paris and fully described and beautifully illustrated as *Polygonum polygamum* by Ventenat, Descr. Pl. Nouv. Cult. Jard. Cels, 65, t. 65 (1800), who said "découvert par Michaux dans les sables arides de la Caroline." Three years later Michaux's own specimens were described as *Polygonella parvifolia*, the type of the new genus *Polygonella* Michx. Fl. Bor.-Am. ii. 240 (1803). As shown by Ventenat's plate and by a portion of the Michaux type, long ago presented to Asa Gray, *Polygonella polygama* (FIGS. 6–8) is the bushy-branched and comparatively low plant with spatulate or oblanceolate leaves (FIG. 7), the larger ones 2–3 mm. broad, the strongly ascending branches with many ascending slender spiciform racemes (FIG. 6), the latter simple or forking. Ventenat's description was to the point: "GRAPPES simples, situées dans les aisselles des feuilles et au sommet des rameaux, représentant par leur ensemble une panicule globuleuse." The ochreolae (FIG. 8) are scarious and nearly uniform in texture and after the fall of the fruit the pedicels rarely show. This plant, true *Polygonella polygama*, with dilated leaves up to 3 mm. broad (Ventenat gave the measurement as merely 3 mm.) is represented in the Gray Herbarium only by the fragment of Michaux's type of *Polygonella parvifolia*, by two collections from near Wilmington, North Carolina (1883, *Dr. Wood;* pine barrens, October 8, 1897, *Biltmore Herb.*, no. 717a) and by the new and overripe material from Virginia. It is not known where Michaux collected

his material. His chief Carolina center was, of course, Charleston, whence we have no material, but he visited Wilmington and made collections of *Dionaea* and other specialties of the region.

In its essential characters true *Polygonella polygama* is very like *P. Croomii* Chapm. (FIGS. 9 and 10), which occurs on sands from southeastern North Carolina (bare dry sand, White Lake, Bladen County, October 6, 1933, *Oosting*, no. 33,648, as *P. polygama*) to northern Florida. The only differences I can find are the much narrower leaves and slightly more prolonged tips of the ochreolae in *P. Croomii*. The two plants seem to me extremes of one species. I am accordingly treating the narrower-leaved plant as

POLYGONELLA POLYGAMA (Vent.) Engelm. & Gray, var. **Croomii** (Chapm.), comb. nov. *P. Croomii* Chapm. Fl. So. U. S. 387 (1860). FIGS. 9 and 10.

The Florida plant (FIGS. 1–3) which generally passes as *Polygonella polygama* is coarser and taller, with horizontally or at least widely divergent open branching, the divergent branches bearing many short and divergent racemes; the leaves (FIG. 2) are oblanceolate or spatulate, the larger ones 3–5 mm. broad; the ochreolae are subcoriaceous, with strongly differentiated broad margin (FIG. 3) and after the fall of the fruit the stubs of the pedicels are more often evident, projecting from the ochreolae. I am unable to separate this divaricately branched Florida plant with dilated leaf-blades from *P. brachystachya* Meisn. (FIGS. 4 and 5), with linear- or linear-spatulate leaves, except by its broader blades. Just as the more northern *P. polygama* has a broad-leaved (var. *typica*) and a narrow-leaved variety (var. *Croomii*), so the Florida *P. brachystachya* has a broad-leaved and a narrow-leaved extreme. The broad-leaved plant I am calling

POLYGONELLA BRACHYSTACHYA Meisn., var. **laminigera**, var. nov. (TAB. 478, FIG 1–3), foliis dilatatis oblanceolatis vel spathulatis, primariis 3–5 mm. latis. TYPE: sandy soil, Indian River, Florida, September, *A. H. Curtiss*, no. 2433 (in Gray Herb.).

*PARONYCHIA BALDWINII (T. & G.) Chapm. SOUTHAMPTON COUNTY: open sand and gravel, bank of Nottoway River, Courtland, *F. L. & S.*, no. 5771; border of dry sandy oak and pine woods northeast of Cypress Bridge, *F. & L.*, no. 6204. SUSSEX COUNTY: border of dry sandy hickory and oak woods, Burt, *F. & L.*, no. 6205. ISLE OF WIGHT COUNTY: border of dry sandy woods near Joyner's Bridge, *F. G. & L.*, no. 6592. See pp. 333 and 339.

*ARENARIA CAROLINIANA Walt. ISLE OF WIGHT COUNTY: open areas in dry sandy pine barrens, south of Zuni, *F. G. & L.*, no. 6595. See p. 356 and MAP 29.

*Nuphar fluviatile (Harper) Standl. Southampton County: muddy pool in Three Creek, Drewryville, *F. L. & S.*, no. 5772; quiet water of Nottoway River at Sycamore Bend, *F. & L.*, no. 6207. See pp. 333 and 340.

On p. 333 I jeered slightly at the inconsistency of rule-makers. The Linnean *Nymphaea* contained several elements which are now considered different genera. After subsequent botanists had dismembered the original *Nymphaea* of 1753, usage through many years retained *Nymphaea* for the many-petaled Water Lilies and *Nuphar* for the Spatter Docks or Cow Lilies. By the dictates of the International Congress at Vienna (1905), however, it was thought that we must use *Nymphaea* for the Spatter Docks and *Castalia* for the Water Lilies. Such usage became established in the work of all who conscientiously followed the International Rules of 1905. Then Conard, disliking to give up *Nymphaea* in its long-established sense, succeeded in demonstrating that Linnaeus himself had eventually restricted *Nymphaea* as Conard had hoped. Every one following the International Rules, consequently, now restricts *Nymphaea* to the Water Lilies. To those not too well informed on nomenclatural detail that seemed to leave *Nuphar* (late 1808 or early 1809) for the Spatter Docks.

However, the scholarly bibliographer, in his prime the Keeper of Botany at the British Museum, the late James Britten, pointed out in 1888 that "L. C. Richard's name *Nymphosanthos* [*Nymphozanthus*], proposed by him (Anal. du fruit, p. 68 (May, 1808) . . . would take precedence of *Nuphar*" (Journ. Bot. xxvi. 7 (1888)). This fact should have been known to those who undertook at Brussels (1910) to rule upon details of nomenclature (especially of *Nomina conservanda*). Nevertheless, when an effort was there made to conserve *Nuphar*, that name was ruled out from conservation (Actes III^me^ Congrès Internat. Bot. Brux. 1910: i. 81). Since *Nuphar* was not conserved it, naturally, had to take its chance, like every other name, under the binding rule of priority. Consequently, in Rhodora, xxi. 184 (1919), I took up *Nymphozanthus*, as explicitly required by the International Rules, especially after the refusal at Brussels to conserve *Nuphar;* and other conscientious defenders of the International Rules, such as Schinz, Thellung and Keller, correctly took up *Nymphozanthus*. Dr. T. A. Sprague, militant defender of what he believes the Rules mean, refers to my strict following of the International Rules of 1905 and 1910 as follows: "to reject, as Fernald has done, an

old-established name such as *Nuphar* (late 1808 or early 1809) in favour of *Nymphozanthus* (May, 1808) *before** it has been decided whether *Nuphar* is to be conserved or not, is to follow the strict letter of the Rules while ignoring their spirit.

"* It is true that the name *Nuphar* was struck off the list of new nomina conservanda adopted at Brussels, but this was because it was anticipated that the name could be retained under the unaltered operation of the International Rules. A new situation has since arisen owing to the discovery that *Nuphar* is antedated by *Nymphozanthus*."—T. A. Sprague, Bot. Soc. and Exch. Club Brit. Isl. Rept. viii. pt. v. 926 (1926).

The "discovery" that *Nymphozanthus* had right of way was not made subsequently to the Brussels Congress. As pointed out, it was emphasized by James Britten in the Journal of Botany, British and Foreign. That those who ruled out *Nuphar* at Brussels were not familiar with the content of that cosmopolitan journal was "too bad," especially since James Britten's successor both at the British Museum and as editor of the Journal of Botany had long been a member of the International Commission on Nomenclature.

Now, however, at Amsterdam, in 1935, *Nuphar* has finally got conserved! It is hoped, however, that in the future those who have been honored by the Congresses by appointment to legislative commissions will not go out of their way to upbraid sincere followers of the Rules, if perchance they take up an earlier valid name for some other which has failed of conservation. If a name has been rejected from conservation, it should not be treated as conserved, even if the rejection involved only partial knowledge of the facts in the case!

Since the chief specialist on nomenclature at Kew feels that in cases like *Nymphozanthus* the spirit, rather than the letter of the rules, should prevail, what will he say of the following procedure of the Director of Kew? Hooker & Arnott published an austral species as *Crantzia attenuata* in 1833. Two-thirds of a century later Coulter & Rose published *Lilaeopsis carolinensis* (1897). Nevertheless, in Sir Arthur W. Hill's *Genus Lilaeopsis*, Journ. Linn. Soc. Bot. xlvii. 535 (1927) the later name, *L. carolinensis* (1897), is upheld, while the earlier name required by the International Rules, *C. attenuata* (1833), is made a synonym of it (or on p. 537 treated as a variety of it). Since *literal* following of the International Rules in some cases has been condemned at Kew, the question arises, whether Kew practice (as

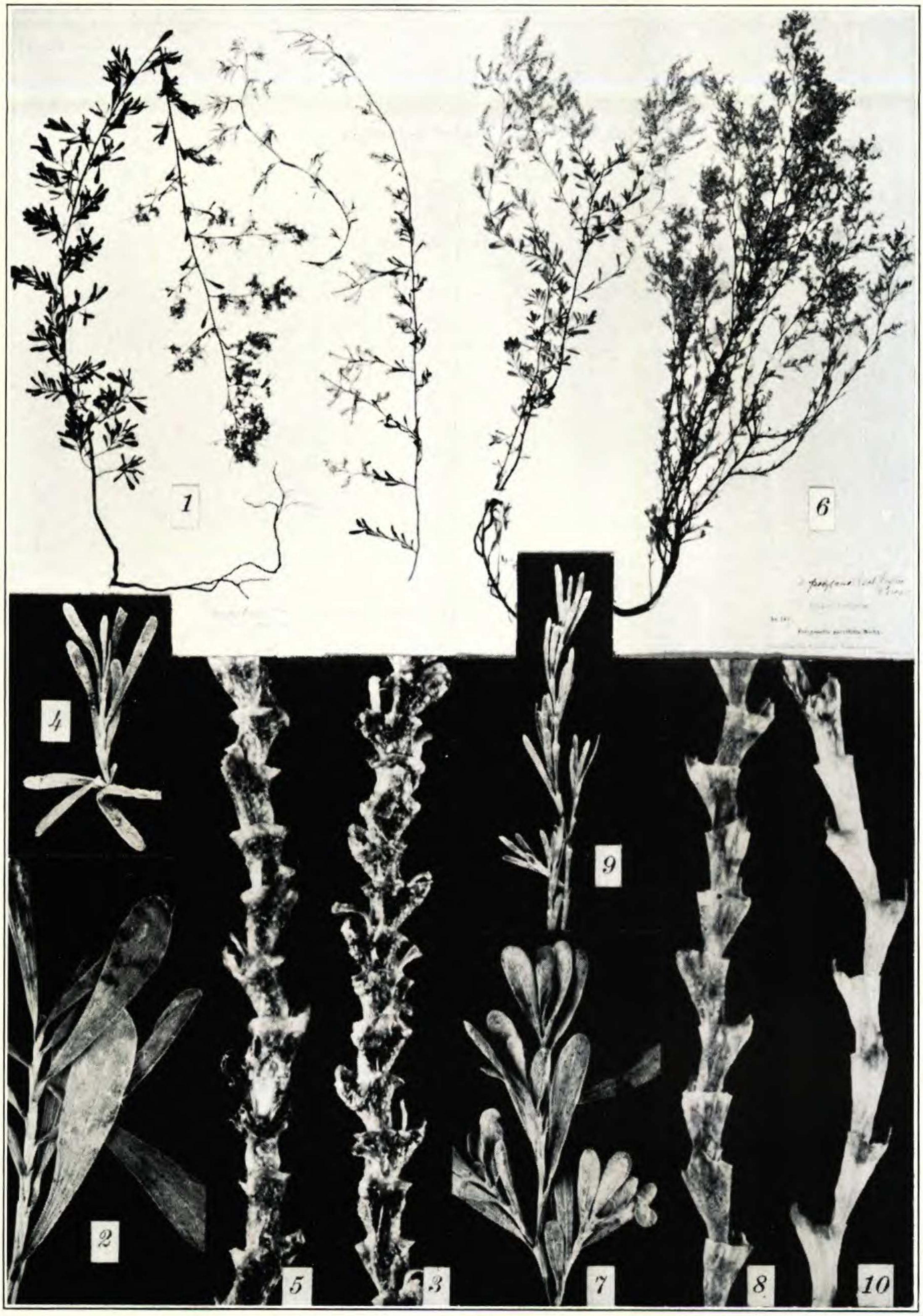

Photo. E. C. Ogden.

POLYGONELLA POLYGAMA: FIG. 6, two plants, × ⅕, from North Carolina; FIG. 7, leaves, × 2, from Virginia; FIG. 8, old rachis, × 10, from Virginia.

P. POLYGAMA, var. CROOMII: FIG. 9, leaves, × 2, from North Carolina; FIG. 10, old rachis, × 10, from North Carolina.

P. BRACHYSTACHYA: FIG. 4, leaves, × 2, from Florida; FIG. 5, old rachis, × 10, from Florida.

P. BRACHYSTACHYA, var. LAMINIGERA: FIG. 1, two plants (TYPE), × ⅕; FIG. 2, leaves, × 2; FIG. 3, old rachis, × 10.

Photo. E. C. Ogden.

GEUM CANADENSE, var. BREVIPES: FIG. 1, TYPE, × ⅖; FIG. 2, portion of fruiting head, showing style-tips, × 10; FIG. 3, mature achene, × 10.

Var. GRIMESII: portion of summit, × ⅖, of TYPE.

exemplified in Hill's nomenclature of *Lilaeopsis*) is sometimes preferably following the *spirit* of the Rules. To the uninitiated it looks as if Hill was still working under the good and sensible old "Kew Rule," which, unfortunately, was rejected at Vienna in 1905 and has not been officially revived.

*Ranunculus ambigens Wats. Chesterfield County: ditch bordering wooded river-swamp along Appomattox River, near Hopewell, *F. L. & S.*, no. 5775.

In a recent study, Rhodora, xxxviii. 174 (1936), I indicated that the southernmost specimens I had seen were from Delaware, Maryland and Tennessee.

Clematis ochroleuca Ait. Sussex County: dry sandy hickory and oak woods, Burt, *F. & L.*, no. 6208. See p. 342.

The only station known to us on the Coastal Plain of southeastern Virginia.

*Asimina parviflora (Michx.) Dunal. Southampton County: swampy woods along Three Creek, Drewryville, *F. L. & S.*, no. 5779. Nansemond County: dry sandy woods, Factory Hill, *F. & L.*, no. 6815. See pp. 333 and 364.

Menispermum canadense L. Princess Anne County: rich woods, Great Neck, *F. & G.*, no. 4407.

Our only station in the southeastern counties.

Rorippa aquatica (Eaton) Palmer & Steyermark. Southampton County: wet depressions in sandy alluvial bottomlands of Three Creek, Drewryville, *F. L. & S.*, no. 5781. Seen on the bottomland of Fontaine Creek, Greensville County. See pp. 332 and 353.

Sarracenia purpurea L., var. venosa (Raf.) Fern. *S. purpurea venosa* Wherry, as subsp. Dinwiddie County: boggy woods near head of Old Town Creek, southwest of Petersburg, *F. & L.*, no. 6211. Sussex County: spring-fed wooded argillaceous sphagnous bog, headwaters of Jones Hole Swamp, north of Coddyshore, *F. & L.*, no. 6210. Isle of Wight County: sphagnous depression in sandy pine woods south of Zuni, *F. & L.*, no. 6600. See pp. 335, 338 and 356.

*× S. Catesbaei Ell. With the preceding and the following, a well marked hybrid. Dinwiddie County: boggy woods near head of Old Town Creek, southwest of Petersburg, *F. & L.*, nos. 6214 and 6215. See p. 338.

S. flava L. Several stations in eastern Dinwiddie, Prince George, Sussex and Isle of Wight Counties. See pp. 325, 326, 328, 334, 335, 338 and 361.

*Drosera capillaris Poir. Dinwiddie County: boggy woods near head of Old Town Creek, southwest of Petersburg, *F. & L.*, no. 6217. Prince George County: argillaceous and siliceous boggy